

**SONY®**

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DIGITAL CAMCORDER

**DSR-390**  
**DSR-390P**  
**DSR-370**  
**DSR-370P**

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**SERVICE MANUAL**

Volume 1 1st Edition (Revised 1)

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**Power HAD**



## **⚠ 警告**

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

## **⚠ WARNING**

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

## **⚠ WARNING**

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

## **⚠ AVERTISSEMENT**

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

#### **CAUTION**

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instructions.

#### **ADVARSEL**

Lithiumbatteri - Eksplosjonsfare.

Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.

Brukt batteri returneres apparatleverandøren.

#### **Vorsicht!**

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

#### **VARNING**

Explosionsfara vid felaktigt batteribyte.

Använd samma batterityp eller en likvärdig typ som rekommenderas av apparatillverkaren.

Kassera använt batteri enligt gällande föreskrifter.

#### **ATTENTION**

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

#### **VAROITUS**

Paristo voi räjähtää jos se on virheellisesti asennettu.

Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.

Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

#### **ADVARSEL!**

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri af samme fabrikat og type.

Levér det brugte batteri tilbage til leverandøren.

**For the customers in the U.S.A. and Canada**

## **RECYCLING NICKEL METAL HYDRIDE BATTERIES**

Nickel Metal Hydride batteries are recyclable. You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.



**For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit <http://www.rbrc.org/>**

Caution: Do not handle damaged or leaking Nickel Metal Hydride batteries.

**Für Kunden in Deutschland**

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert "Batterie leer" oder nach längerer Gebrauchsdauer der Batterien "nicht mehr einwandfrei funktioniert". Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.

**For the customers in the U.S.A. and Canada**

## **RECYCLING LITHIUM-ION BATTERIES**

Lithium-Ion batteries are recyclable. You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.



**For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit <http://www.rbrc.org/>**

Caution: Do not handle damaged or leaking Lithium-Ion batteries.

**For the customers in the Netherlands  
Voor de klanten in Nederland**

Hoe u de batterijen moet verwijderen, leest u in de Gebruikshandleiding.

Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA).





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## Manual Structure

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### Purpose of this manual

This manual is the Service Manual Vol. 1 of the digital camcorder DSR-370/370P. This manual is intended for use by trained service engineers, and describes information (service overview, menu setting, replacement of the parts and adjustments, etc) on the premise of component level service.

The mechanical and circuit structures of DSR-370/370P and DSR-390/390P are almost the same.

They differ in the CCD type and the shape of inside panel.

The illustrations used in this manual are for DSR-370/370P.

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### Related manuals

Besides to this Service Manual Vol. 1, the following manuals are provided.  
For obtaining, contact your local Sony Sales Office/Service Center.

- **Operating Instructions DSR-390/390P (Supplied with DSR-390/390P)**

This manual is necessary for application and operation of the DSR-390/390P.

For obtaining, contact your local Sony Sales Office/Service Center.

Part No. 3-776-645-1X

- **CD-ROM Manual DSR-390/390P (Supplied with the DSR-390/390P)**

This manual contains the Japanese, English, French, German, Italian, and Spanish operating instructions (PDF) of the DSR-390/390P.

For obtaining, contact your local Sony Sales Office/Service Center.

Part No. 3-776-663-0X

- **Operating Instructions DSR-370/370P (Supplied with DSR-370/370P)**

This manual is necessary for application and operation of the DSR-370/370P.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 3-206-359-1X

- **CD-ROM Manual DSR-370/370P (Supplied with the DSR-370/370P)**

This manual contains the Japanese, English, French, German, Italian, and Spanish operating instructions (PDF) of the DSR-370/370P.

For obtaining, contact your local Sony Sales Office/Service Center.

Part No. 3-691-094-0X

- **Service Manual Vol. 2 DSR-390/390P/370/370P/300A/300AP (Available on request)**

Contains the information on the premise of component level service (parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts) of the DSR-390/390P/370/370P/300A/300AP.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-955-209-2X

- **Service Manual DSBK-301A (Available on request)**

Contains the information on installation, and the information on the premise of component level service (parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts) of the index picture board DSBK-301A.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-955-216-0X

- **Service Manual DSBK-501/501P (Available on request)**

Contains the information on installation, and the information on the premise of component level service (parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts) of the analog composite input board DSBK-501/501P.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-955-217-0X

- **Service Manual DXF-801/801CE (Available on request)**

Contains the information on the premise of component level service (part replacement, alignment, parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts) of the viewfinder DXF-801/801CE.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-955-212-0X

- **Service Manual CA-370 (Available on request)**

Contains the information on the premise of component level service (alignment, parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts) of the intercom adaptor CA-370.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-967-978-0X

- **Service Manual CA-WR855 (Available on request)**

Contains the information on the premise of component level service (parts list, semiconductor pin assignments, block diagrams, schematic diagrams and board layouts) of the camera adaptor CA-WR855.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-955-215-0X

- **Service Manual VCT-U14 (Available on request)**

Contains the parts list of the tripod adaptor VCT-U14.

For obtaining, contact your local Sony Sales Office/Service Center.

Part number: 9-977-221-0X

- **"Semiconductor Pin Assignments" (Available on request)**

This "Semiconductor Pin Assignments" CD-ROM allows you to search for semiconductors used in B&P Company equipment.

Semiconductors that cannot be searched for on this CD-ROM are listed in the service manual for the corresponding unit. The service manual contains a complete list of all semiconductors and their ID Nos., and thus should be used together with the CD-ROM.

Part number: 9-968-546-XX



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## Contents

The following is a summary of all the sections for understanding the contents of this manual.

### **Section 1 Optional Accessories Installation**

Describes the installation of optional accessories.

### **Section 2 Service Overview**

Describes the location of major parts, board switch and slit settings, service tools and test fixtures, replacement of the boards, etc.

### **Section 3 Troubleshooting**

Describes the alarms and countermeasures to be displayed when the unit detects abnormality.

### **Section 4 Menu Setting**

Describes the menu setting, etc.

### **Section 5 Periodic Inspection and Maintenance**

Describes the periodic inspection and cleaning procedure.

### **Section 6 Replacement of Mechanical Parts**

Describes the replacement procedures and adjustment after replacement.

### **Section 7 Tape Path Alignment**

Describes the adjustment procedures of tape path system.

### **Section 8 General Information for Electrical Alignment**

Describes the adjusting items, equipment and tools, menu operation.

### **Section 9 Camera System Electrical Alignment**

Describes the camera system electrical adjustment.

### **Section 10 VTR System Electrical Alignment**

Describes the VTR system electrical alignment for system control, servo, audio, RF and the like.

## Section 1

### Optional Accessories Installation

#### 1-1. Attaching the 4-type or 5-type Viewfinder

An optional 4-type viewfinder (DXF-40 series) or 5-type viewfinder (DXF-50 series) can be attached in accordance with the following procedures:

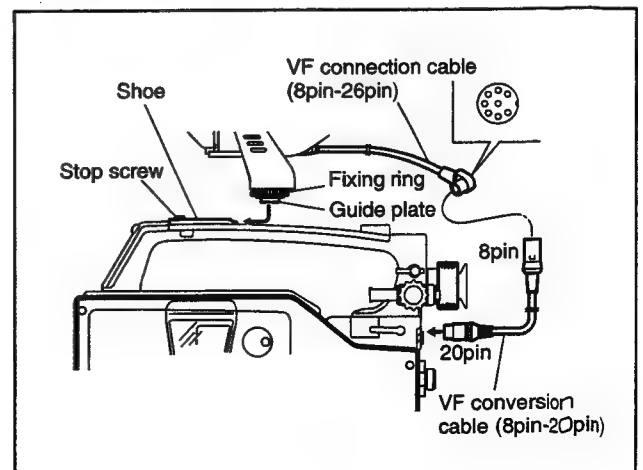
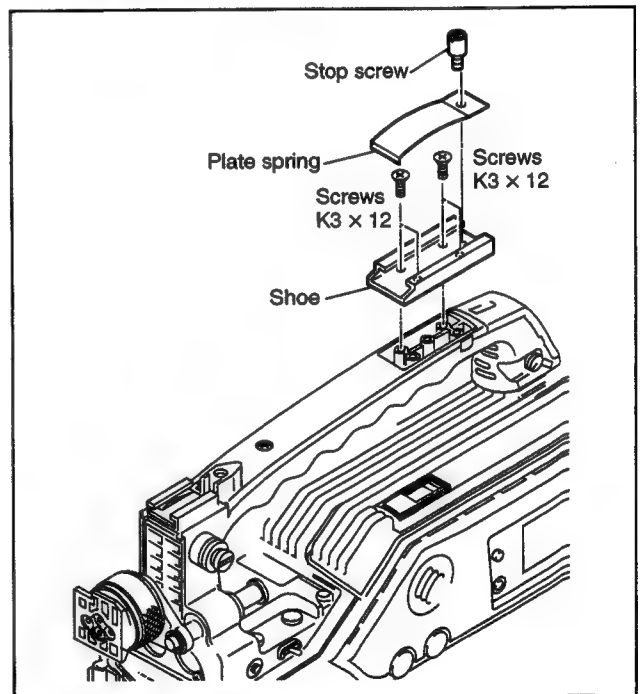
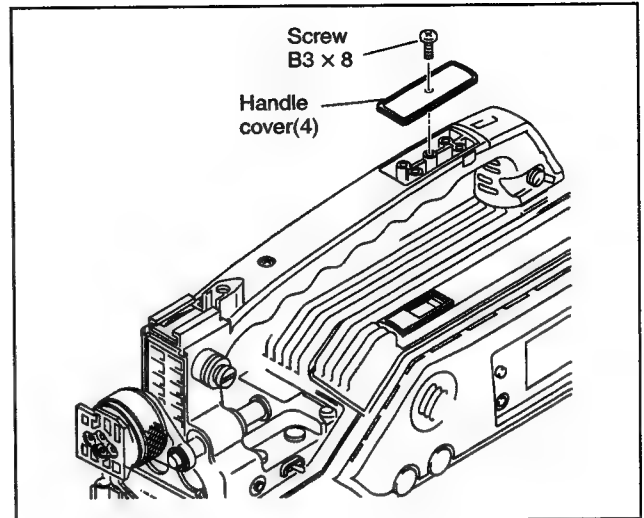
##### Parts Required (available separately)

Name	Sony Part No.
Shoe	3-664-218-0X
Plate spring	3-664-228-0X
Stop screw	3-664-213-0X
Screw K3 × 12 (4 pcs)	7-682-250-04
Conversion cable (8pin-20pin) *1	1-783-665-11

\*1 This conversion cable is not required for DXF-51.

##### Attaching Procedure

1. Remove the one screw (B3 × 8) and remove the handle cover (4).
2. Tighten the shoe with four screws (K3 × 12).
3. Fix the plate spring with the stop screw.
4. Fit the guide plate in the shoe and tighten the fixing ring.
5. Connect the cable as shown in the figure. (except DXF-51)



## 1-2. Installing the Left Eye Adaptor to the Viewfinder

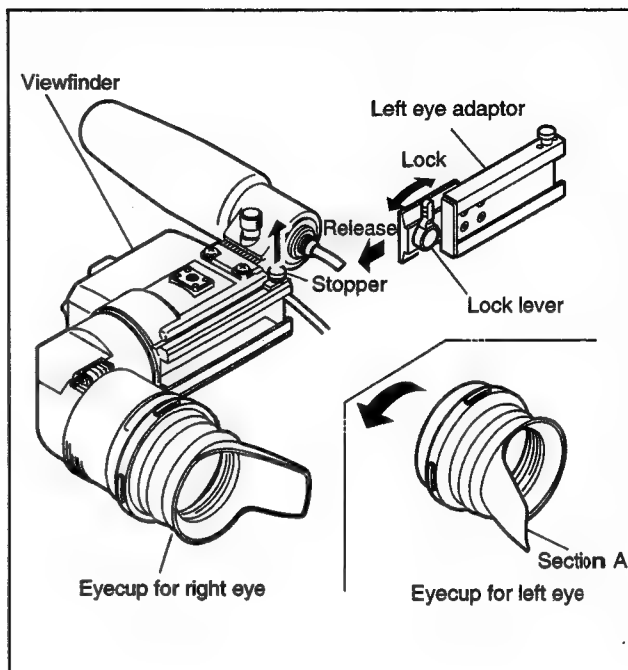
Left eye adaptor allows you to view the viewfinder screen by the left eye.

### Part Required (available separately)

Left eye adaptor (Sony Part No.: A-8267-181-A)

### Attaching Procedures

1. Remove the viewfinder from the unit.  
(Refer to Operating Instructions.)
2. Remove the eyecup, and put the eyecup (for left eye) facing the Section A outside.
3. While pushing up the stopper of the viewfinder, attach the left eye adaptor. At this time, pull the lock lever to release locking.
4. Fix the left eye adaptor by pushing the lock lever vertically direction.
5. Attach the viewfinder to the unit.  
(Refer to Operating Instructions.)



### 1-3. Replacing the Filter

Type of filter	Sony Part No.
No.1 3200 K	3-708-372-01
No.2 5600 K + 1 / 8ND	3-612-636-01
No.3 5600 K	3-708-372-21
No.4 5600 K + 1 / 64ND	3-612-636-11
CROSS* (available separately)	3-200-281-01

\* When attaching the cross filter, put the crosshatching side outside.

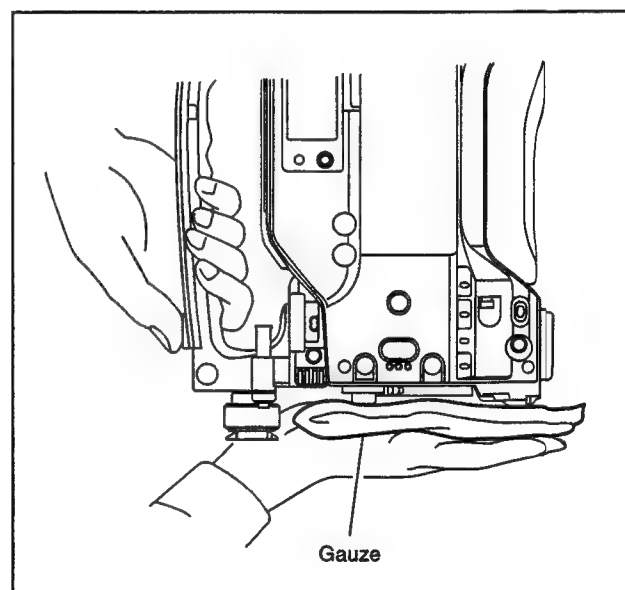
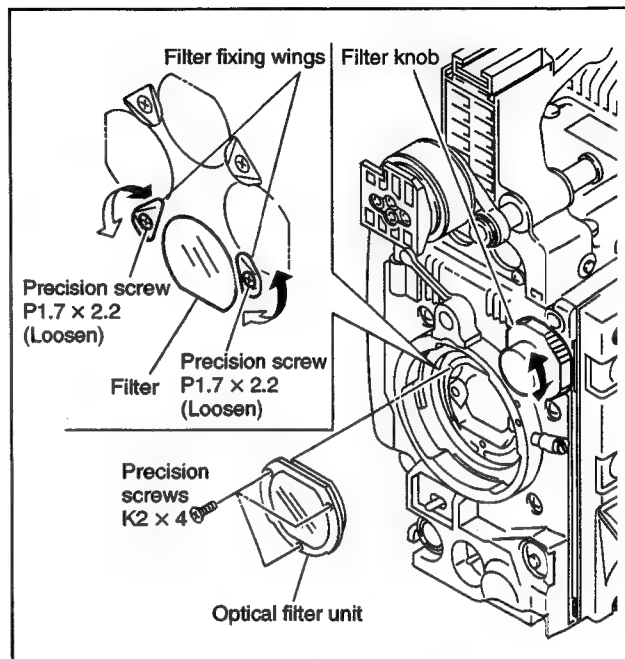
1. Remove the three precision screws ( $K2 \times 4$ ) and remove the optical filter unit.
2. Turn the filter knob to select the filter to be replaced.
3. Loosen the two precision screws ( $P1.7 \times 2.2$ ) fixing both sides of the filter and open the filter fixing wings as shown in the figure.
4. Hold the camera in a vertical position as shown in the figure by grasping the camera handle, and the filter will come off. At that time, put a clean cloth such as a gauze on your hand so that the hand is clear of the filter surface.
5. Attach the replacement filter in the reverse order of above.

#### Point to notice when attaching the filter:

- Place the replacement filter on attachment position of the filter disc carefully by holding the eage of the filter.
- Align the position of filter with tweezers.

#### Note

After the filter replacement, perform the filter indication setting SERVICE menu of Page 20.  
(Refer to Section 4-2-2.)

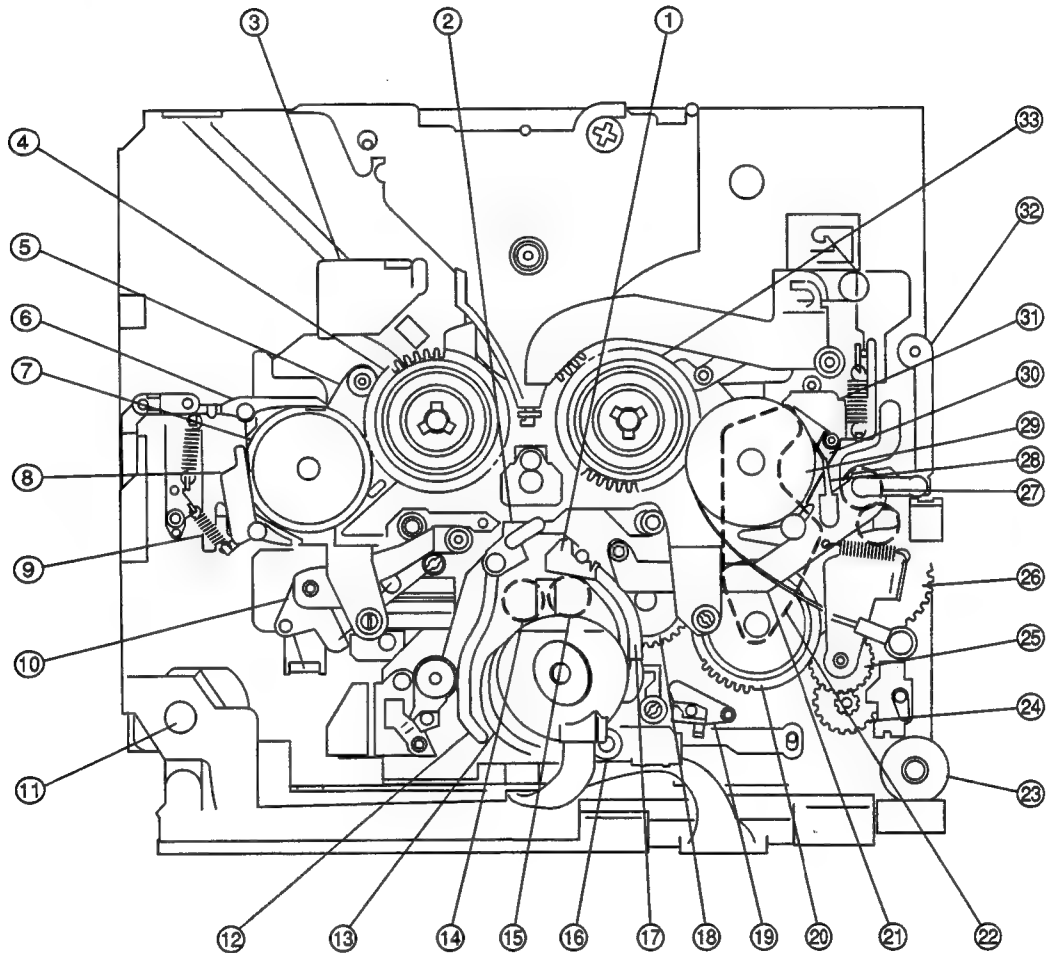


## Section 2

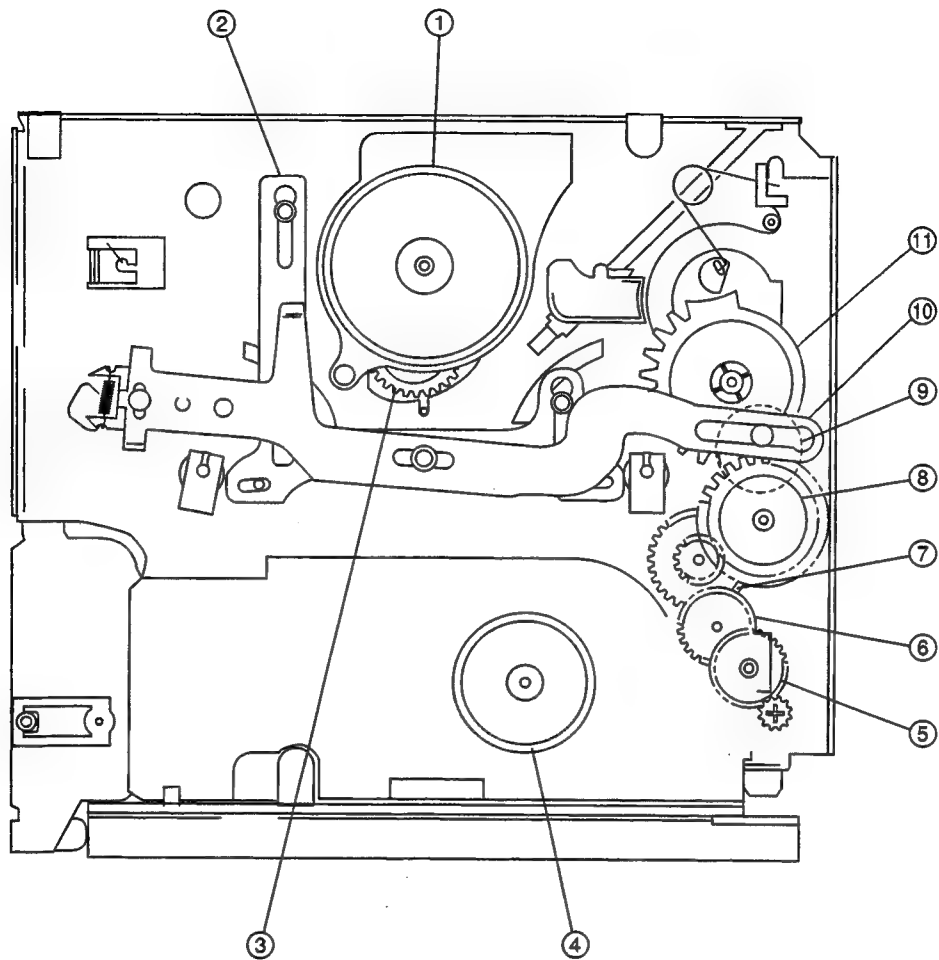
### Service Overview

#### 2-1. Location of Major Parts

##### 2-1-1. Location of Major Mechanical Parts



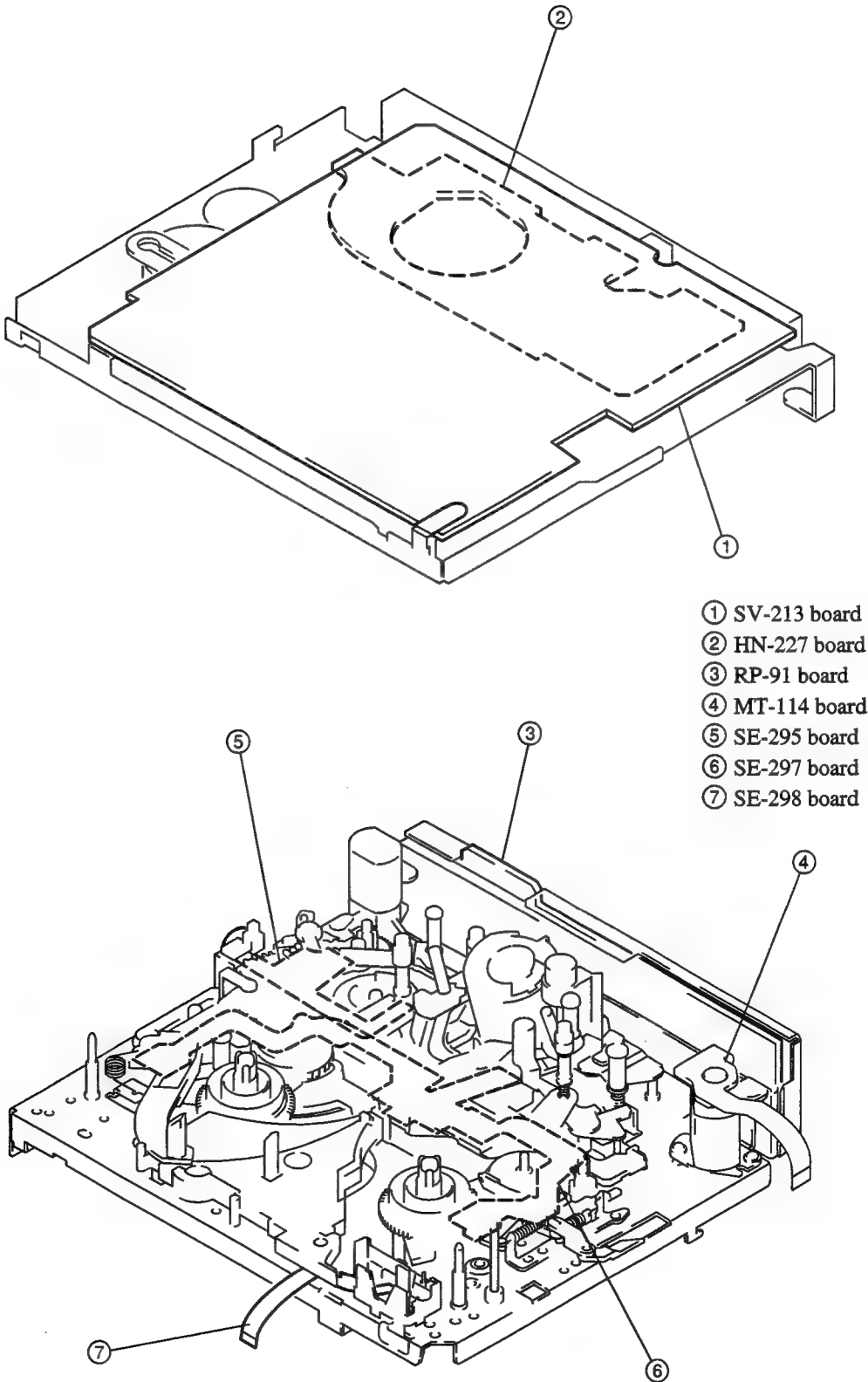
- |                      |                  |                      |                       |
|----------------------|------------------|----------------------|-----------------------|
| ① Coaster (S)        | ⑪ Shift motor    | ⑳ TR arm             | ③① Soft brake arm (S) |
| ② Coaster (T)        | ⑫ Rail (T)       | ㉑ Reel plate (S)     | ③② Sensor bracket     |
| ③ MIC                | ⑬ Drum           | ㉒ LD motor           | ③③ Reel table (S)     |
| ④ Reel table (T)     | ⑭ GL (T)         | ㉓ No. 1 gear         |                       |
| ⑤ Reel plate (T)     | ⑮ GL (S)         | ㉔ HC gear            |                       |
| ⑥ TL soft brake      | ⑯ C roller       | ㉕ Mode gear          |                       |
| ⑦ Sub reel gear (T)  | ⑰ Rail (S)       | ㉖ Release cam gear   |                       |
| ⑧ Soft brake arm (T) | ⑱ Threading gear | ㉗ TR band            |                       |
| ⑨ Hard brake arm (T) | ㉑ TC assembly    | ㉘ Sub reel gear (S)  |                       |
| ⑩ Pinch arm          | ㉒ Cam gear       | ㉙ Hard brake arm (S) |                       |



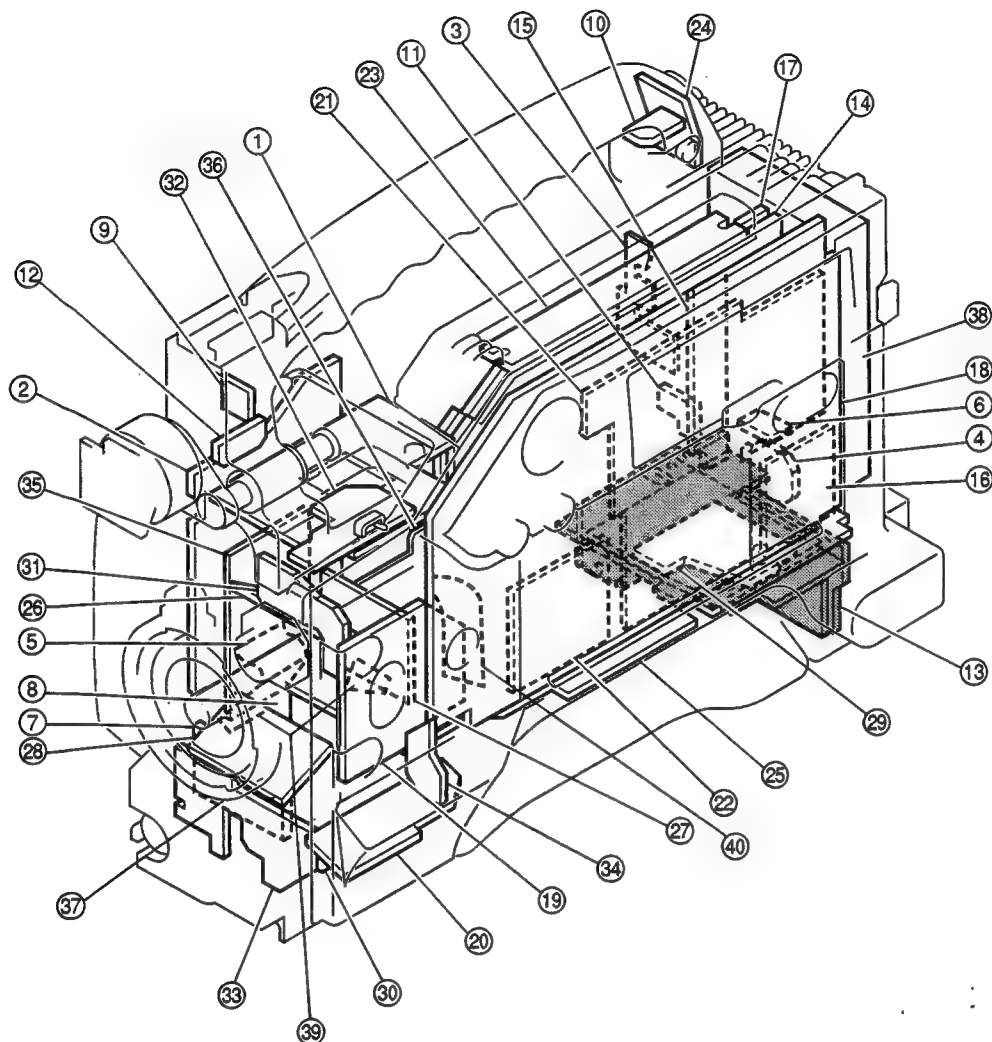
- |                               |                     |
|-------------------------------|---------------------|
| ① Reel motor                  | ⑦ Gear C            |
| ② Reel plate compression link | ⑧ Reel drive gear A |
| ③ Idler gear                  | ⑨ Gear E            |
| ④ Capstan motor               | ⑩ Reel drive arm    |
| ⑤ Gear A                      | ⑪ Reel drive gear B |
| ⑥ Gear B                      |                     |

**2-1-2. Location of the Boards**

**• Mechanical Deck**



• Main Chassis



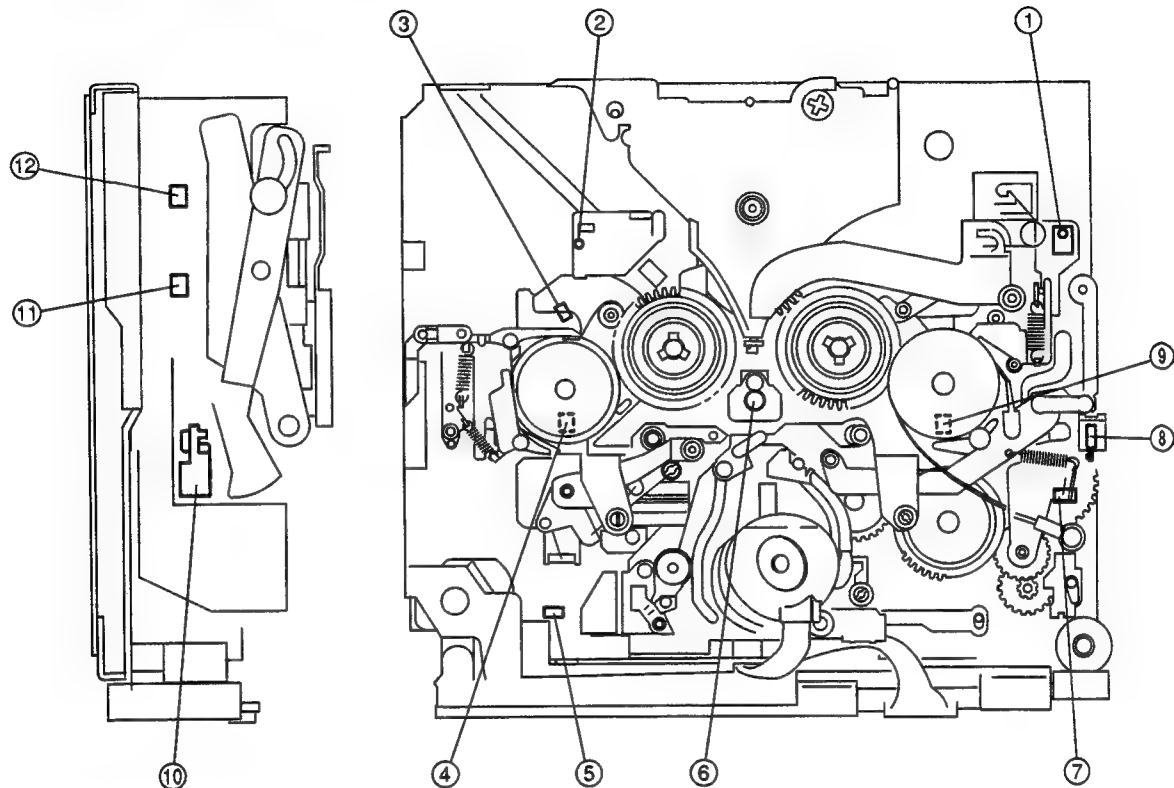
- ① AA-104 board
- ② AT-150 board
- ③ CC-68 board
- ④ CN-2277 board
- ⑤ CN-1811 board
- ⑥ CN-1823 board
- ⑦ CN-1864 board
- ⑧ CN-1865 board
- ⑨ CN-1866 board
- ⑩ CN-1867 board
- ⑪ CN-1873 board
- ⑫ CN-1874 board
- ⑬ CP-373 board
- ⑭ DPR-141C board

- ⑮ DU-36 board
- ⑯ DV-21C board
- ⑰ ES-31/ES-31P board
- ⑱ FP-118A board
- ⑲ FP-99 board
- ⑳ GCN-16 board
- ㉑ IPM-94 board (DSBK-301A)
- ㉒ IV-54 board (DSBK-501)
- ㉓ KY-405 board
- ㉔ LE-221 board
- ㉕ MB-833 board
- ㉖ PA-205 board
- ㉗ PA-206 board
- ㉘ PA-207 board

- ㉙ PS-570 board
- ㉚ PSW-71 board
- ㉛ SE-566 board
- ㉜ SW-18 board
- ㉝ SW-19 board
- ㉞ SW-929 board
- ㉟ TG-187/TG-187P board
- ㊱ VA-199 board
- ㊲ IR-33 board
- ㊳ DC-DC converter
- ㊴ CN-1524 converter
- ㊵ CN-1981 board



### 2-1-3. Location of Sensors



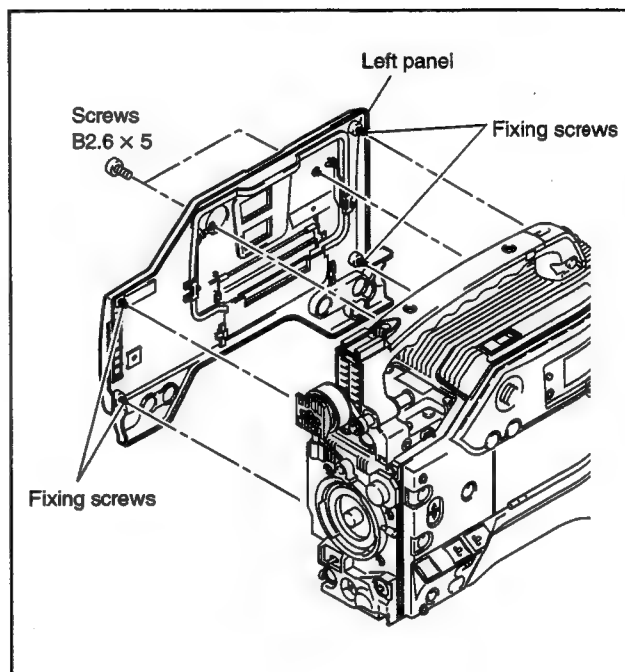
#### Function of the Sensors

- |   |   |
|---|---|
| <p>① Cassette compartment lock switch<br/>Detects that the cassette compartment has locked.<br/>Starts threading when the cassette compartment locks from the open state.<br/>During EJECT, EJECT operations end when the cassette compartment opens from the locked state.</p> <p>② False REC detection sensor<br/>Detects the setting position of mis-record-prevention switch of the cassette tape.</p> <p>③ Reel position sensor<br/>Detects the reel position, such as standard cassette position or mini-cassette position.</p> <p>④ Take-up reel FG sensor<br/>Detects the rotation speed of the take-up reel.</p> <p>⑤ Dew sensor<br/>Detects dew condensation in the unit.</p> | <p>⑥ Tape top end sensor (LED)</p> <p>⑦ Mechanical function cam sensor (Cam position sensor)<br/>Detects the movement of the cam whether it is moved to the specified position.</p> <p>⑧ Tape end sensor (sensor)</p> <p>⑨ Supply reel FG sensor<br/>Detects the rotation speed of the supply reel.</p> <p>⑩ Tape top sensor (sensor)</p> <p>⑪ Cassette-In switch<br/>Detects whether a cassette tape is inserted in the cassette compartment.</p> <p>⑫ Cassette identification switch<br/>Detects the size of a cassette tape in the cassette compartment.</p> |
|---|---|

## 2-2. Removing and Attaching the Cabinet

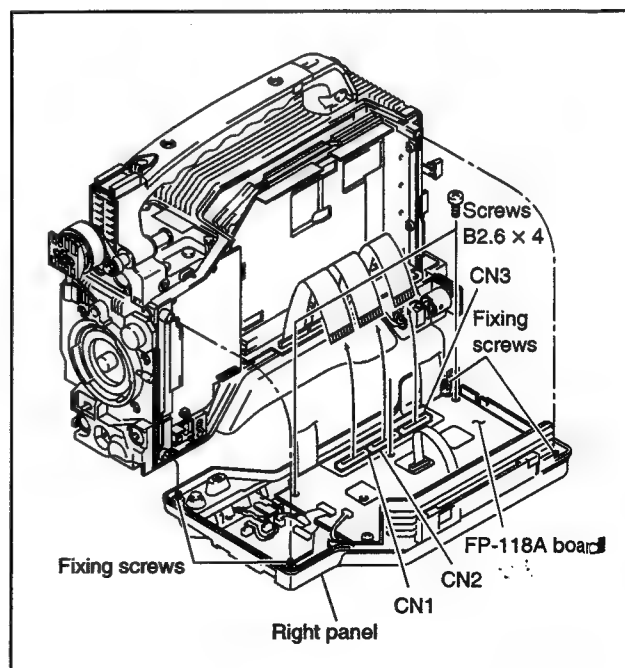
### 2-2-1. Left Panel and Cassette Compartment Lid

1. Remove the two screws (B2.6 × 5) from the cassette compartment lid.
2. Loosen the four fixing screws and remove the left panel and cassette compartment lid.
3. Return the left panel and cassette compartment lid to its original position with the reverse procedures of removal.



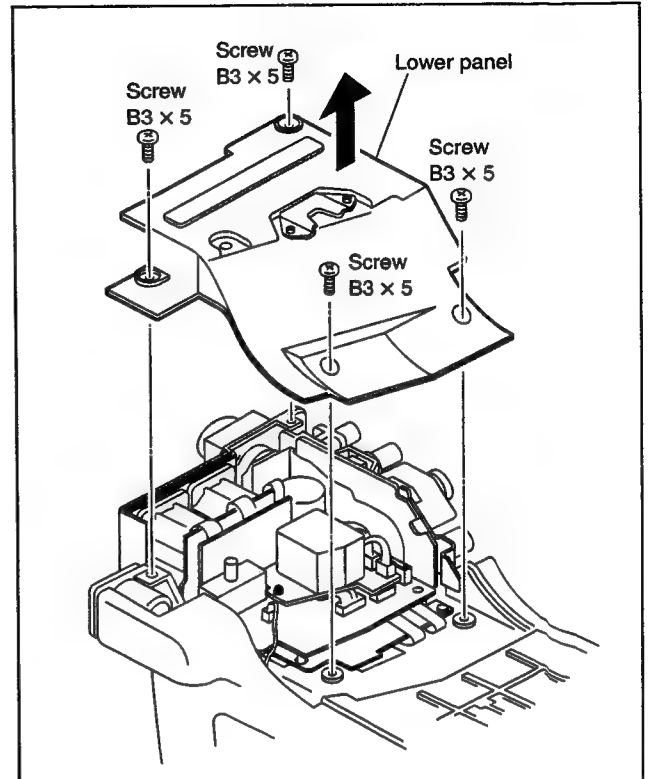
### 2-2-2. Right Panel

1. Loosen the four screws and open the right panel.
2. Disconnect the three flat cables (CN1, CN2 and CN3) from the FP-118A board.
3. Remove the two screws (B2.6 × 4) and remove the right panel (leave the FP-118A board attached).
4. Return the right panel to its original position with the reverse procedures of removal.



### 2-2-3. Lower Panel

1. Remove the four screws (B3 × 5) and remove the lower panel.

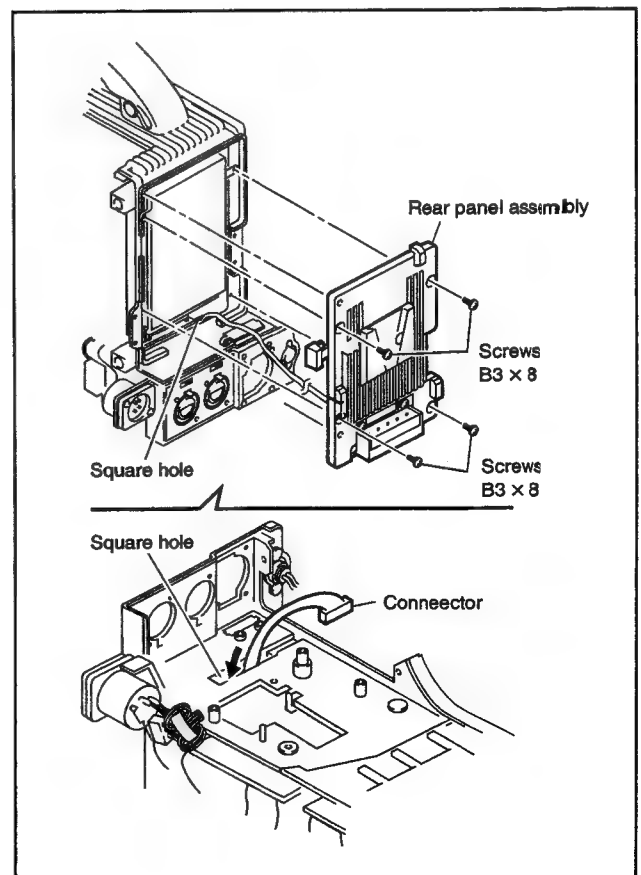


### 2-2-4. Rear Panel Assembly

1. Remove the PS-570, CN-2277 and CP-373 boards. (Refer to Sections 2-9-11, 2-9-12, and 2-9-13.)
2. Remove the four screws (B3 × 8) and remove the rear panel assembly.
3. Return the rear panel assembly to its original position with the reverse procedures of removal.

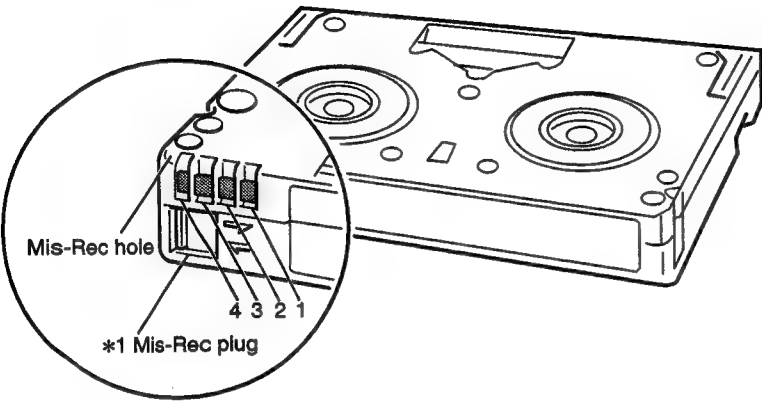
#### Point to notice when attaching the rear panel assembly:

Be sure to thread the harness through the square hole of the frame assembly.

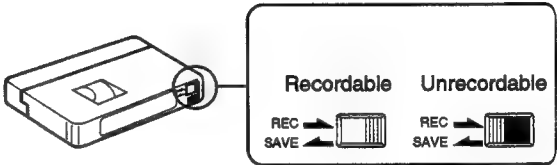


2-3. Functions of Cassette

Standard Cassette

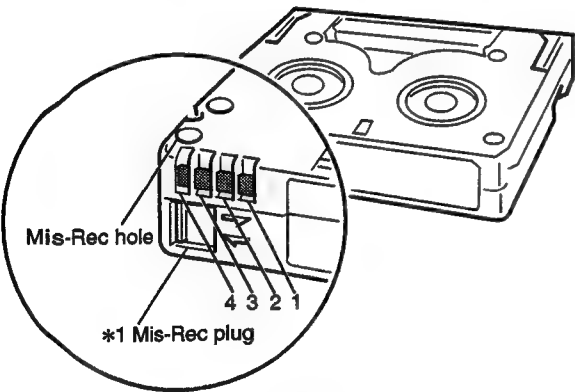


\*1 Mis-Rec plug



- Mis-Rec switch is operated by opening or closing of this plug.

Mini Cassette



Pin No.	Function	
	Built-in memory	No Built-in memory
1	+DC	Tape thickness detection
2	DATA	Tape type detection (Ex.: ME/MP)
3	CLOCK	Tape usage detection (Ex.: Consumer/Professional)
4	GND	—

## 2-4. Circuit Structure

This unit is composed of the following boards.

System	Board name	Circuit structure
VIDEO	ES-31/31P	CAMERA/VIDEO ENCODER
	IPM-94 (DSBK-301A OPTION UNIT)	INDEX PICTURE
	IV-54 (DSBK-501 OPTION UNIT)	ANALOG COMPOSITE INPUT
	PA-205	CAMERA PREAMP
	PA-206	CAMERA PREAMP
	PA-207	CAMERA PREAMP
	VA-199	CAMERA AGC, WB AMP
	TG-187/187P	CAMERA TIMING GENERATOR
AUDIO/VIDEO	AA-104	MIC AMP, VF CONNECTOR
	DPR-141C	CAMERA/VIDEO DIGITAL PROCESS
	DV-21C	I.LINK PROCESS
	RP-91	REC/PB RF AMP, CHCD (CHANNEL CODING)
SERVO	CC-68	CASSETTE COMPARTMENT SWITCH, TAPE TOP SENSOR
	HN-227	SERVO MECHANISM DECK INTERFACE
	MT-114	REEL SHIFT MOTOR/SWITCH
	SE-295	FUNCTION CAM SENSOR, TAPE END SENSOR
	SE-297	REEL FG SENSOR, REEL SHIFT SENSOR, CASSETTE COMPARTMENT LOCK SWITCH
	SE-298	MIC, REC INHIBIT SWITCH
	SV-213	SERVO
SYSCON	AT-150	CAMERA MICROCOMPUTER
	FP-118A	RIGHT PANEL SWITCH, VIDEO MICOM., ANALOG AUDIO, LCD
CONNECTOR	CN-1864	2/3 LENS CONNECTOR
	CN-1865	RM CONNECTOR
	CN-1866	RM JACK
	CN-2277	CCZ FLEXIBLE CARD
	CN-1811	
	CN-1823	DV CONNECTOR
	CN-1867	EARPHONE JACK
	CN-1873	+12 V DC CONNECTOR
	CN-1874	ANTON CONNECTOR
	CN-1524	TG-PA FLEXIBLE CARD
	CN-1981	TG-MB FLEXIBLE CARD
	CP-373	REAR CONNECTOR BOX
	IR-33	LENS HOT SHOE

System	Board name	Circuit structure
SWITCH	FP-99	RIGHT PANEL SWITCH
	GCN-16	GAIN SWITCH
	KY-405	VIDEO CONTROL SWITCH
	PSW-71	AWB/ABB SWITCH, POWER SWITCH
	SW-19	SHUTTER SWITCH
	SW-18	EDIT SEARCH SWITCH
	SW-929	ROTARY SWITCH
OTHERS	DU-36	MECHANICAL BACK-UP
	LE-221	BACK TALLY LED
	MB-833	CAMERA/VIDEO MOTHER BOARD
	PS-570	VIDEO LIGHT, DC-DC CONVERTER
	SE-566	FILTER DISC DETECTOR

## 2-5. Notes on Tightening Screws

### 1. Attaching Screw to the Chassis

This unit has a small and light design, and uses numerous M1.4  $\times$  2.5 (1.4 mm diameter), M2  $\times$  5, and M2  $\times$  6 (2 mm diameter) screws.

When tightening the above screws, be very careful of the tightening torque. In order to prevent the chassis's screw-hole from damage against the excessive tightening torque, be sure to use the following torque screwdriver and torque screwdriver bits.

<u>Tools</u>	<u>Sony Part No.</u>
Torque screwdriver	J-6325-400-A
Torque screwdriver bit (For M1.4)	J-6325-110-A
Torque screwdriver bit (For M2)	J-6325-380-A

<u>Screws</u>	<u>Tightening torque</u>
For M1.4 screws	$0.09 \pm 0.01 \text{ N}\cdot\text{m}$ ( $0.9 \pm 0.1 \text{ kgf}\cdot\text{cm}$ )
For M2 screws	$0.19 \pm 0.03 \text{ N}\cdot\text{m}$ ( $1.9 \pm 0.3 \text{ kgf}\cdot\text{cm}$ )

The above torque screwdrivers can be used for both M1.4 and M2 screws.

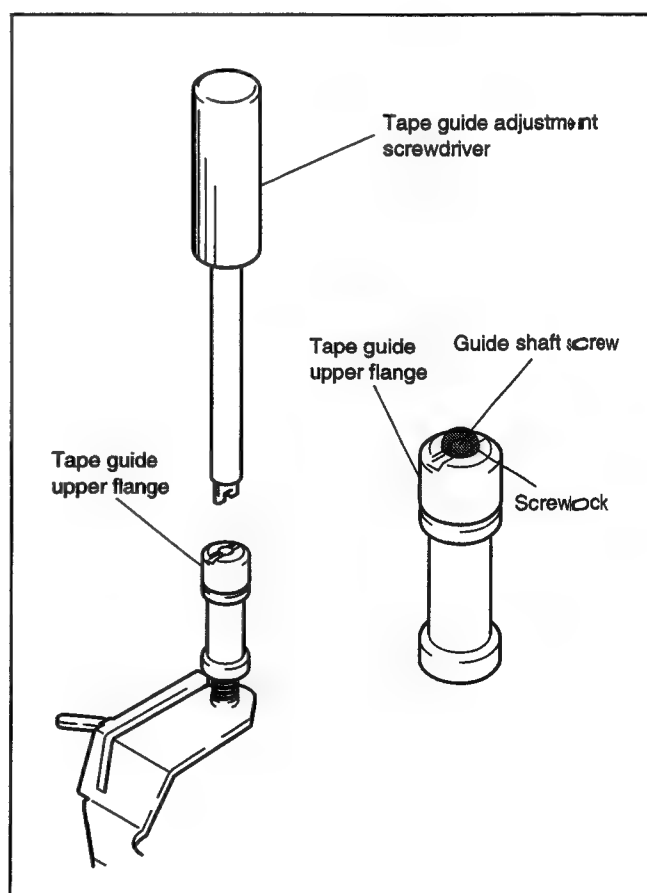
### 2. Screwlocking of Tape Guide's Upper Flange

When performing the tape guide height adjustment during tape path adjustment, use the following tape guide adjustment screwdriver.

After adjusting the tape guide height, apply screwlocking compound to the upper flange of tape guide and tapped Section of guide shaft screw.

<u>Tools</u>	<u>Sony Part No.</u>
Tape guide adjustment screwdriver	J-6082-362-A
Screwlocking compound (Three-bond 1401B)	7-432-114-11

**Point to notice when applying the screwlocking compound:**  
Do not apply screwlocking compound to the guides along the tape running surface.

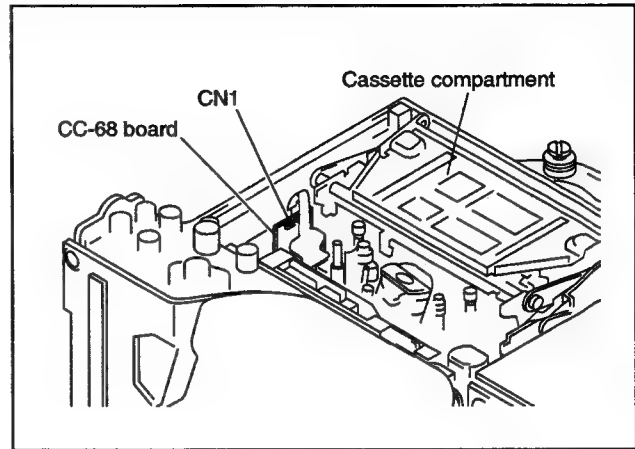


## 2-6. Operating the Unit without Loading a Cassette Tape

1. Turn off the power switch.
2. Remove the right side panel and remove the ES-31/31P and DPR-141C boards. (Refer to Section 2-9-4.)
3. Remove the screw (B2.6 × 4) and remove the dust-proof sheet. (Refer to Section 2-9-8.)
4. Set the SLACK DETECTION ON/OFF switch (S500-4/SV-213 board) to off.
5. Attach the ES-31/31P and DPR-141C boards to the unit.
6. Remove the left panel and cassette compartment lid. (Refer to Section 2-2-1.)
7. Disconnect the connector CN1 from the CC-68 board.
8. Turn on the power switch.
9. Operate the unit with the desired tape transport buttons at the top.

### Note

Set the SLACK DETECTION ON/OFF switch (S500-4 / SV-213 board) to on, after operation.

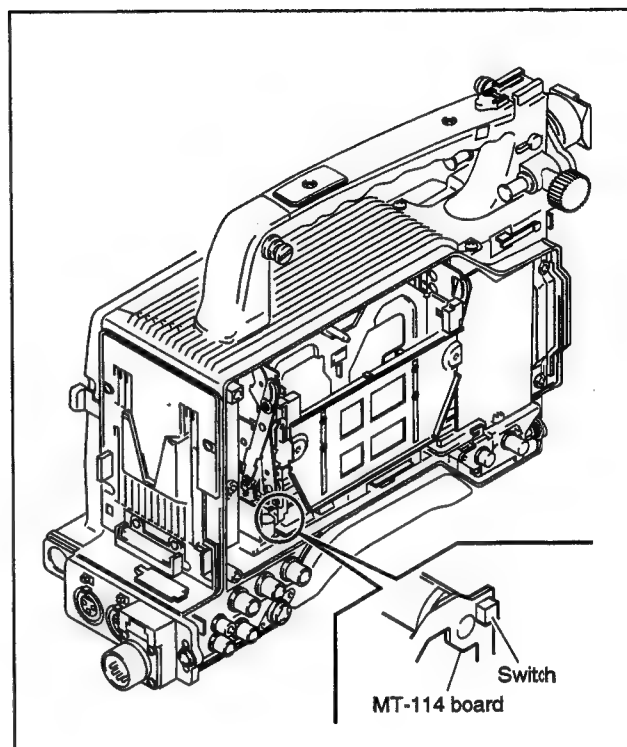




## 2-7. Shifting the Reel

### 2-7-1. When the Power Can be Turned ON

1. Turn off the power switch.
2. Remove the left panel and cassette compartment lid. (Refer to Section 2-2-1.)
3. Disconnect the connector CN1 from the CC-68 board.
4. Turn on the power switch.
5. Press the EJECT button to set the unit in EJECT state.
6. Press the switch on the MT-114 board. The reel is shifted alternately between the standard cassette position and mini cassette position every time you press the switch.

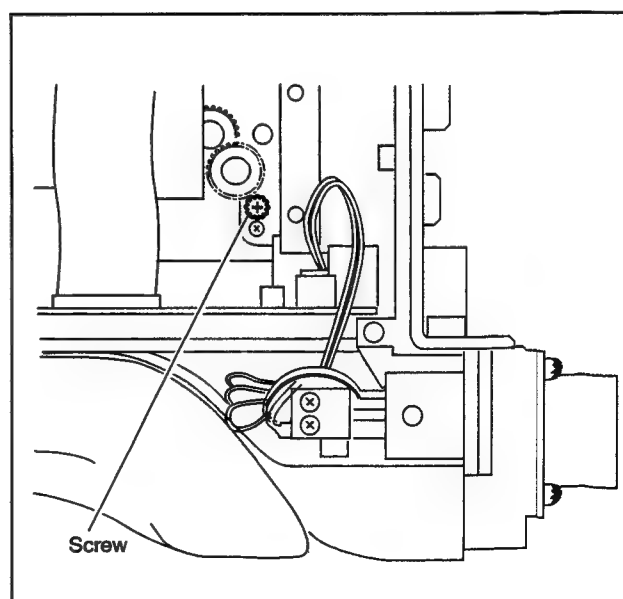


### 2-7-2. When the Power Cannot be Turned ON

1. Open the right panel. (Refer to Section 2-2-2.)
2. Remove the DPR-141C and ES-31/31P boards. (Refer to Section 2-9-4.)
3. Remove the two screws (B2.6 × 4) and remove the dust-proof sheet. (Refer to step 2 of Section 2-9-5.)
4. Turn the screw as shown in the figure.  
Clockwise direction: Standard cassette position  
Counterclockwise direction: Mini cassette position

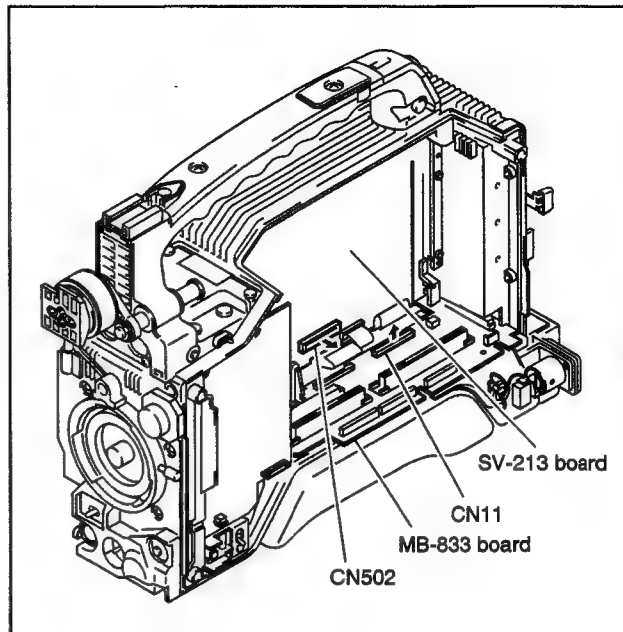
#### Notes

- Do not turn the screw with excessive force.
- Do not turn this screw frequently.

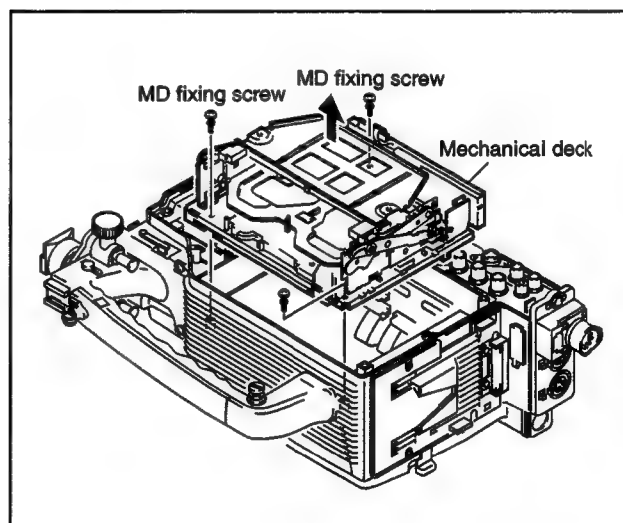


## 2-8. Removing Mechanical Deck

1. Open the right panel. (Refer to Section 2-2-2.)
2. Remove the ES-31/31P and DPR-141C boards. (Refer to Section 2-9-4.)
3. Remove the DU-36 board. (Refer to Section 3-9-5.)
4. Remove the flat cables CN502 from the SV-213 board and CN11 from the MB-833 board.



5. Remove the two screws (B2.6 × 4) and open the AT-150 board. (Refer to Section 2-9-6.)
6. Remove the left panel and cassette compartment lid. (Refer to Section 2-2-1.)
7. Remove the three screws (MD fixing screws) and pull out the mechanical deck in the arrow direction.



## 2-9. Removing and Attaching the Boards

### 2-9-1. FP-118A Board

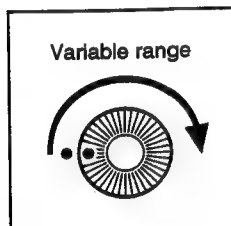
#### Note

In order to protect the stored data inside the board, power line of this unit is always activated even if the power switch is turned off. As the data inside the FP-118A board is backed up by the lithium battery, IC chips on the FP-118A board may damage by the usual service activity. Therefore, be sure to remove the lithium battery inside the TC panel before removing the FP-118A board.

1. Remove the lithium battery from the TC panel.
2. Remove the four knobs and four knob spacers.
3. Remove the right panel. (Refer to Section 2-2-2.)

#### Point to notice when installing the knob spacers:

- (1) Be sure to put a knob spacer behind the knob.
- (2) Align the dot mark on the knob with the dot mark on the unit.

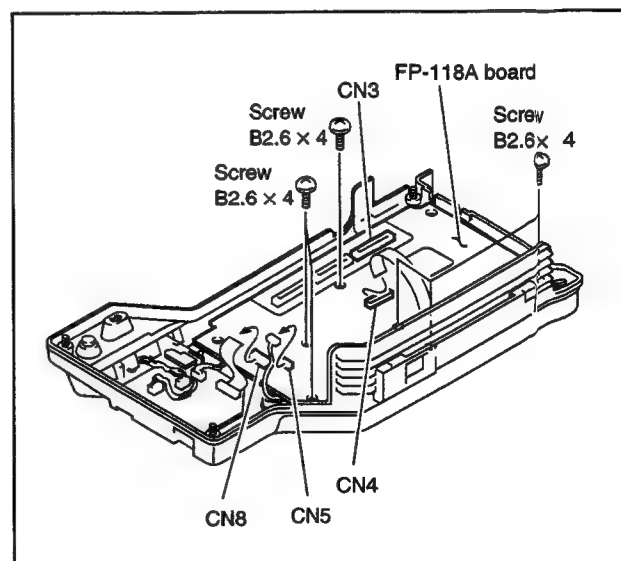
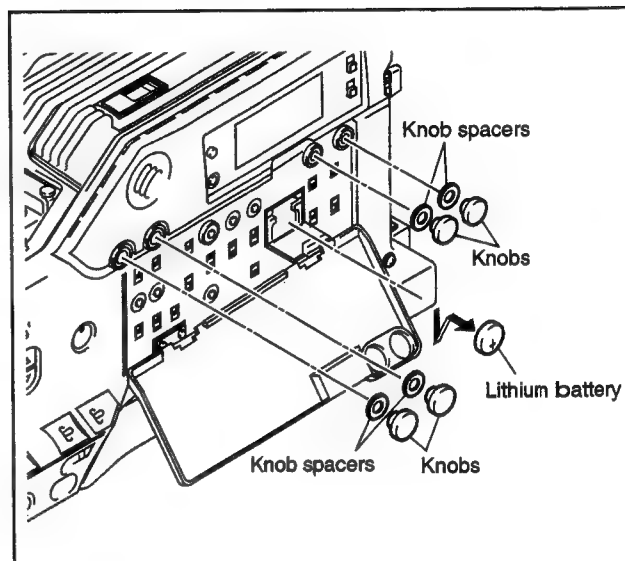


4. Disconnect the two flat cables (CN4 and CN8) and a connector (CN5) from the FP-118A board.
5. Remove the six screws (B2.6 × 4) and remove the FP-118A board.
6. Return the board to its original position with the reverse procedures of removal.

#### Point to notice after replacing the FP-118A board:

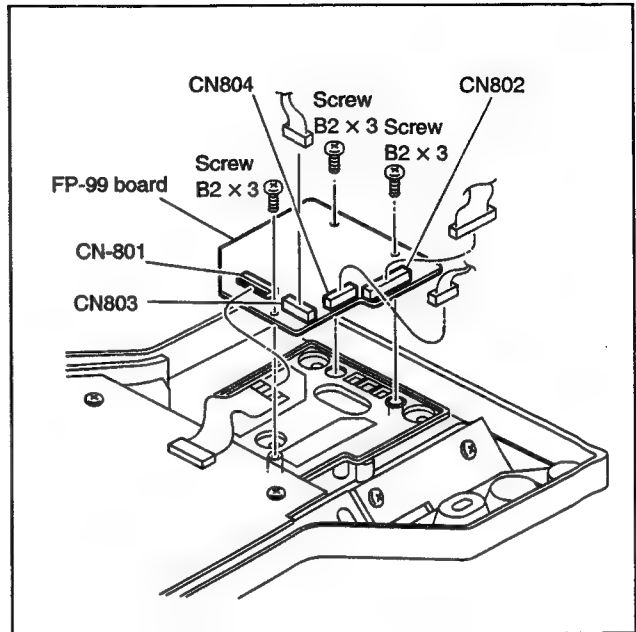
Be sure to make presetting of the KY EEPROM's echo-back data. (Refer to Section 2-17-4.)

Maintenance information is stored inside the EEPROM on the FP-118A board. The same data is stored inside the EEPROM on the HN-227 board as an echo-back data. To write the lost data in EEPROM on the FP-118A board after the FP-118A board replacement, carry out the KY EEPROM ECHO BACK DATA PRESET in menu No. 752.



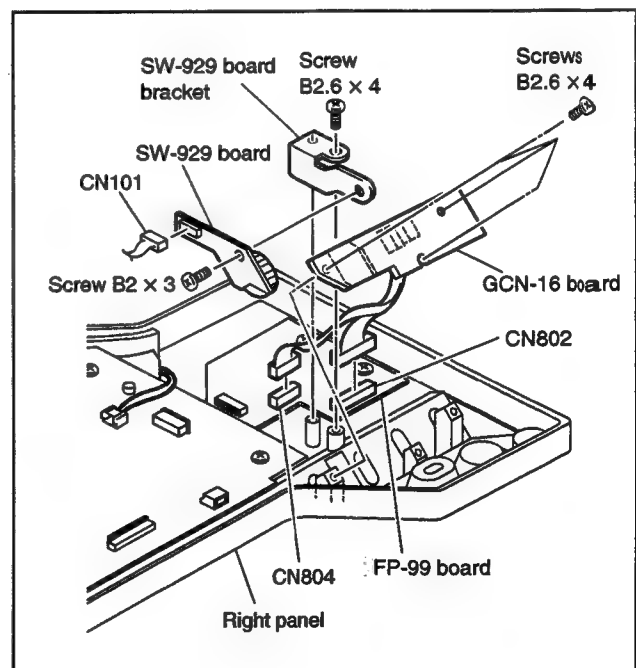
### 2-9-2. FP-99 Board

1. Open the right panel. (Refer to Section 2-2-2.)
2. Disconnect the flat cable (CN801) and the three connectors (CN802, CN803, and CN804) from the FP-99 board.
3. Remove the three screws (B2 × 3) and remove the FP-99 board.
4. Return the board to its original position with the reverse procedures of removal.



### 2-9-3. GCN-16 and SW-929 Boards

1. Remove the right panel. (Refer to Section 2-2-2.)
2. Disconnect the two connectors (CN802 and CN804) from the FP-99 board.
3. Remove the three screws (B2.6 × 4) and remove the GCN-16 board.
4. Disconnect the a connector (CN101) from the SW-929 board.
5. Remove the screw (B2.6 × 4) and remove the SW-929 board together with bracket.
6. Remove the screw (B2 × 3) and remove the SW-929 board.
7. Return the board to its original position with the reverse procedures of removal.



#### 2-9-4. DPR-141C, ES-31/31P and DV-21C Boards

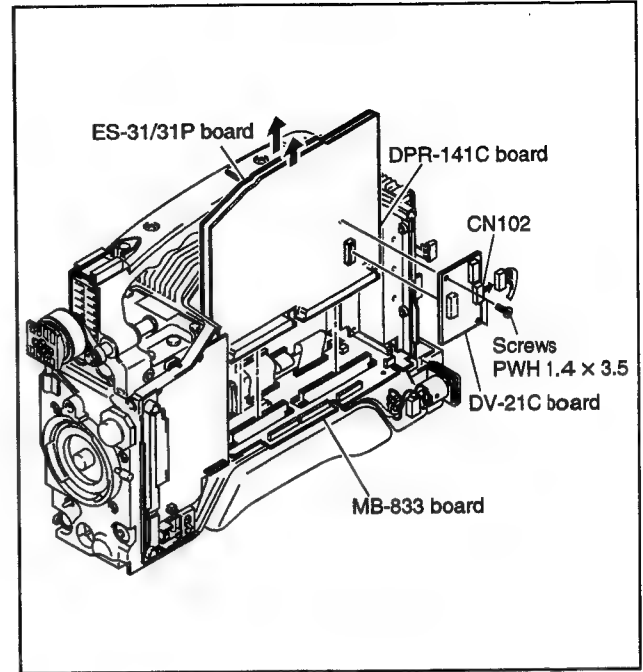
1. Open the right panel. (Refer to Section 2-2-2.)
2. Disconnect the connector CN102 on the DV-21C board.
3. Pull out the DPR-141C and ES-31/ES-31P boards in the arrow direction.
4. Remove the two screws (PWH1.4 × 3.5), then pull out the DV-21C board from the connector on the DPR-141C board.
5. Return the board to its original position with the reverse procedures of removal.

##### Point to notice when attaching the board:

Insert the board along the right and left sides of rails until it securely comes in contact with the MB-833 board. Take care that the harness is not caught.

##### Notes

- When replacing the EP-31/31P board, perform the service menu's "Page 21 Memory Backup". (Refer to Section 4-2-2.)
- When replacing the DPR-141C board, reset serial No. using the No.522 in the system menu, initialize the VA EEPROM (SY) using the NO.750 in the maintenance menu and perform the service menu's "Page 21 Memory Backup". (Refer to Sections 4-1-2, 4-1-3 and 4-2-2.)

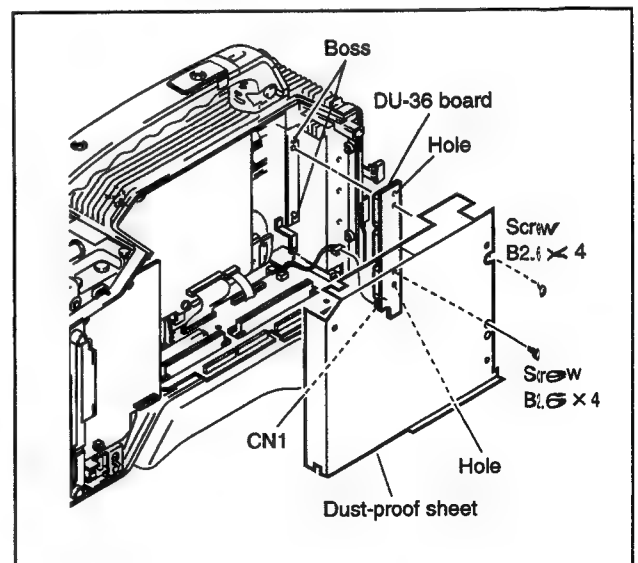


#### 2-9-5. DU-36 Board

1. Remove the DPR-141C and ES-31/31P boards. (Refer to Section 2-9-4.)
2. Remove the screw (B2.6 × 4) and remove the dust-proof sheet.
3. Disconnect the connector CN1 from the DU-36 board and remove the screw (B2.6 × 4), then remove the DU-36 board.
4. Return the board to its original position with the reverse procedures of removal.

##### Point to notice when attaching the board:

Align the hole of the DU-36 board with two boss portions of the frame assembly.

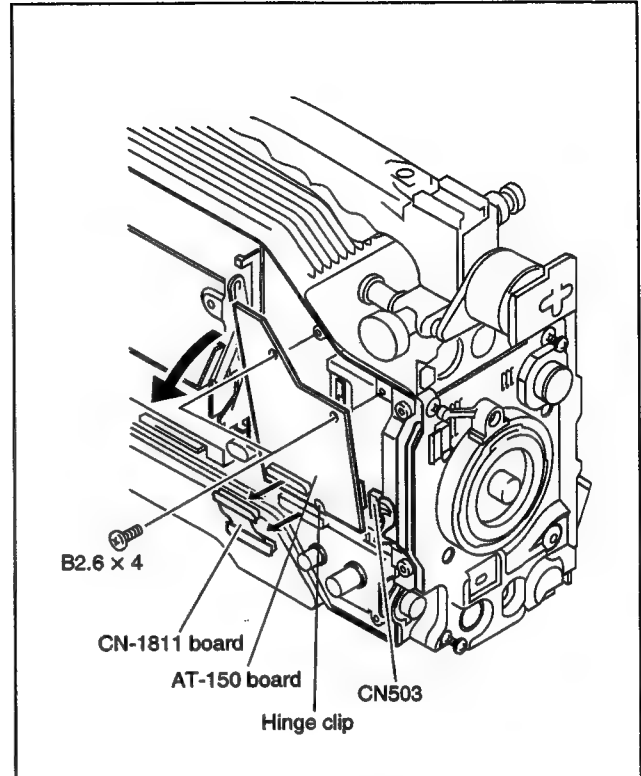


### 2-9-6. AT-150 Board

1. Remove the left panel and cassette compartment lid.  
(Refer to Section 2-2-1.)
2. Disconnect the connector CN503 from the AT-150 board and remove the two screws (B2.6 × 4).
3. Disconnect the CN-1811 board.  
(Refer to Section 2-9-20.)
4. While picking a hinge clip, remove the AT-150 board.
5. Return the board to its original position with the reverse procedures of removal.

**Point to notice when attaching the board:**

Align the hinge clip with hole.

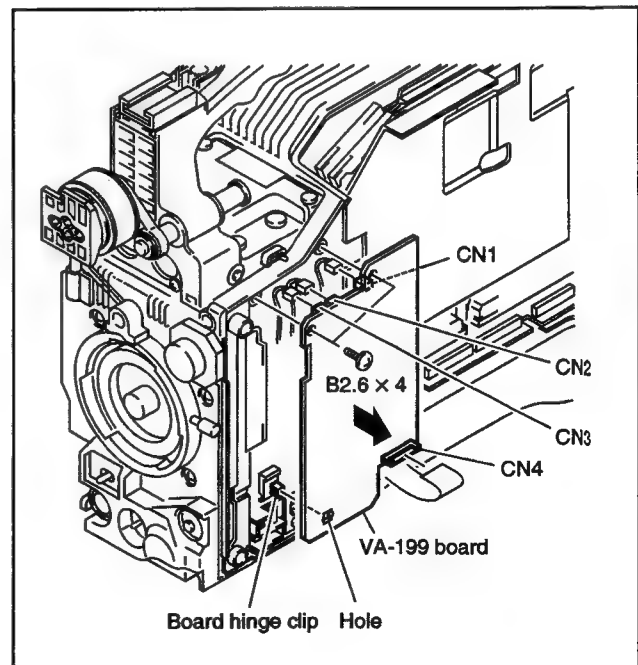


### 2-9-7. VA-199 Board

1. Open the right panel. (Refer to Section 2-2-2.)
2. Disconnect the flat cable (CN4) and the three connectors (CN1, CN2, and CN3) from the VA-199 board.
3. Remove the two screws (B2.6 × 4). While picking the board hinge clip, remove the VA-199 board.
4. Return the board to its original position with the reverse procedures of removal.

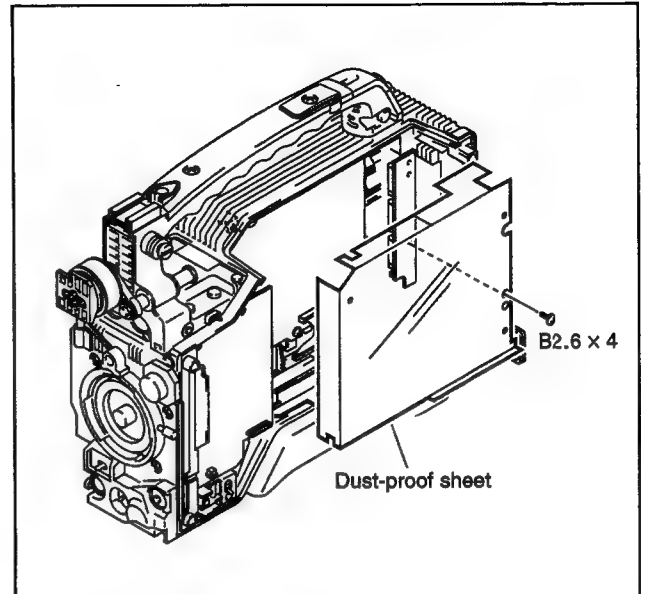
**Point to notice when attaching the board:**

Align the board hinge clip with hole.



### 2-9-8. SV-213 Board

1. Open the right panel. (Refer to Section 2-2-2.)
2. Remove the ES-31/31P and DPR-141C boards. (Refer to Section 2-9-4.)
3. Remove the screw (B2.6 × 4) and remove the dust-proof sheet.



4. Disconnect the two flat cables (CN501 and CN502) and two flexible cards (CN504 and CN505) from the SV-213 board.
5. Remove the three screws (PWH1.4 × 2.5), disconnect the connector CN500, and remove the SV-213 board.
6. Return the board to its original position with the reverse procedures of removal.

**Point to notice when disconnecting the connector:**

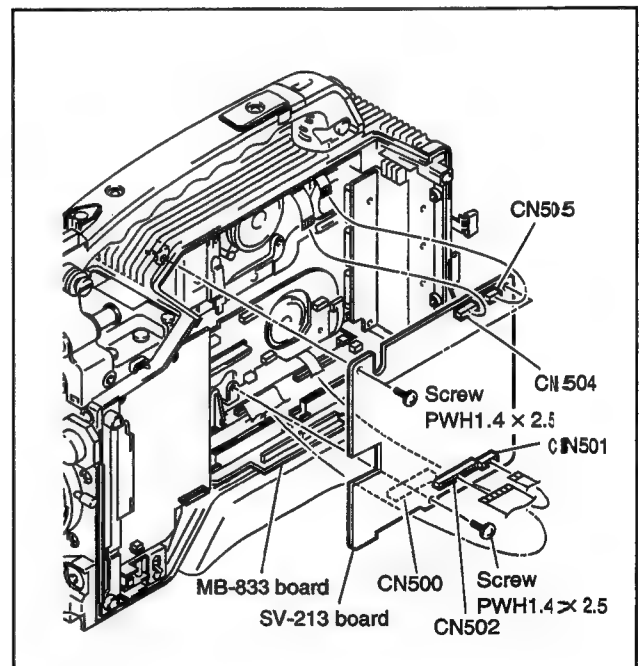
In order to prevent the board from damage, pull out the connector CN500 gradually.

**Point to notice when connecting the connector:**

Be sure not to apply excessive force to the component side of the SV-213 board when connecting the connector CN500.

**Point to notice when removing/installing the board:**

Be very careful not to damage the connectors, harnesses, and flexible card wires/boards that are connected to the MB-833 board. (Refer to Section 2-15.)

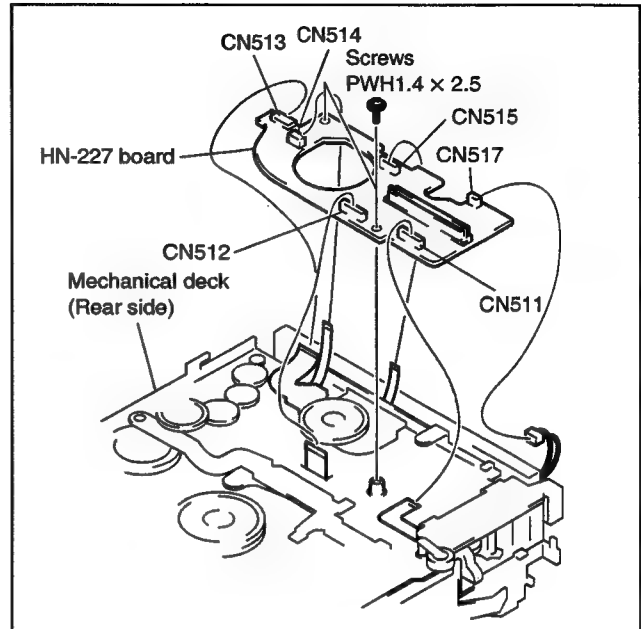


### 2-9-9. HN-227 Board

1. Remove the mechanical deck. (Refer to Section 2-8.)
2. Remove the SV-213 board. (Refer to steps 4 and 5 of Section 2-9-8.)
3. Disconnect the five flexible cards (CN511, CN512, CN513, CN514, and CN515) from the HN-227 board.
4. Disconnect the connector CN517 from the HN-227 board.
5. Remove the two screws (PWH1.4 × 2.5) and remove the HN-227 board.
6. Return the board to its original position with the reverse procedures of removal.

#### Note

When replacing the HN-227 board, remove IC1 from the former HN-227 board, then mount it on the new HN-227 board.

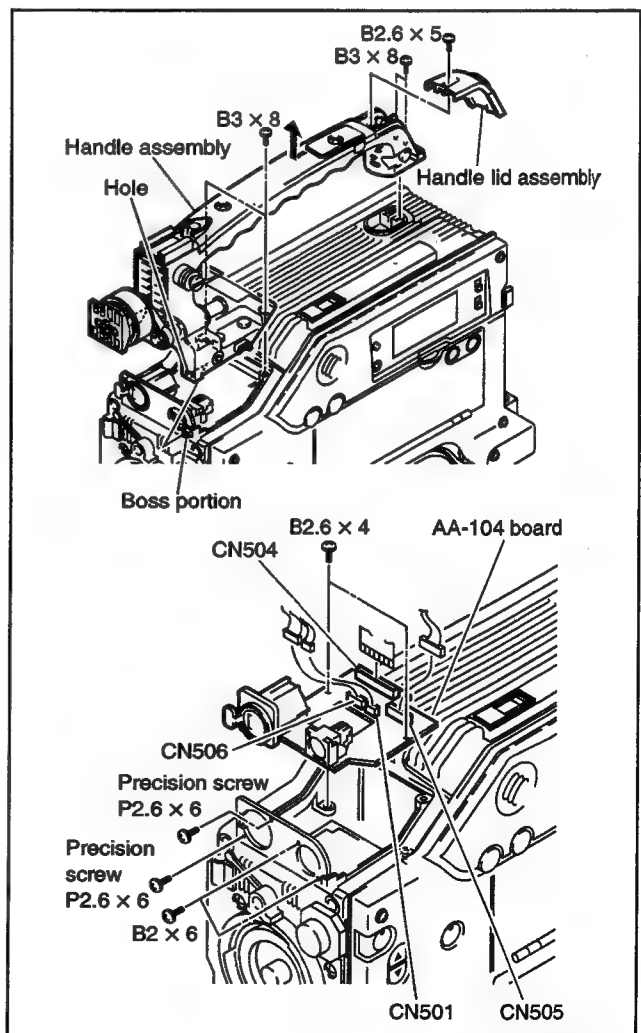


### 2-9-10. AA-104 Board

1. Remove the ES-31/31P and DPR-141C boards. (Refer to Section 2-9-4.)
2. Remove the screw (B2.6 × 5) and remove the handle lid assembly.
3. Remove the four screws (B3 × 8) and remove the handle assembly in the arrow direction.
4. Disconnect the flat cable (CN504) and the three connectors (CN501, CN505, and CN506) from the AA-104 board.
5. Remove the six screws (Precision P2.6 × 6, B2 × 6, and B2.6 × 4) and remove the AA-104 board.
6. Return the board to its original position with the reverse procedures of removal.

#### Point to notice when attaching the board:

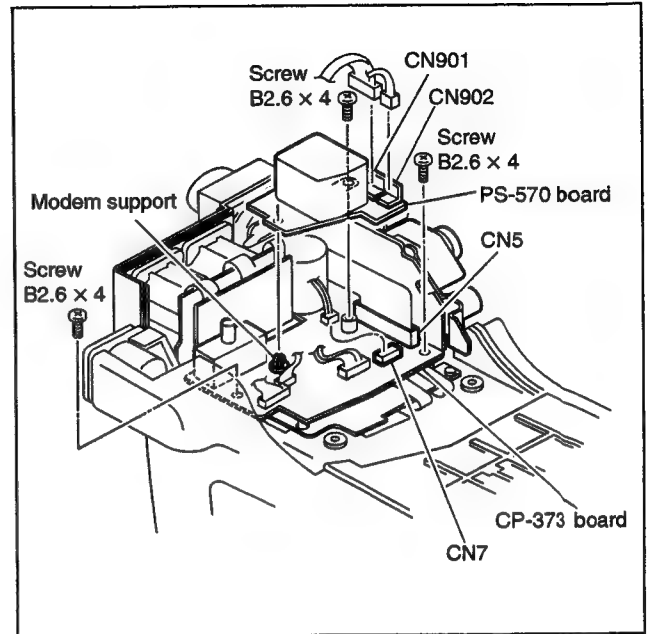
Align the boss portion with square hole when installing the handle assembly.





### 2-9-11. PS-570 Board

1. Remove the lower panel. (Refer to Section 2-2-3.)
2. Disconnect the two connectors (CN901 and CN902) from the PS-570 board. Disconnect the connector CN7 from the CP-373 board.
3. Remove the screw (B2.6 × 4). While picking the modem support, remove the PS-570 board.
4. Return the board to its original position with the reverse procedures of removal.



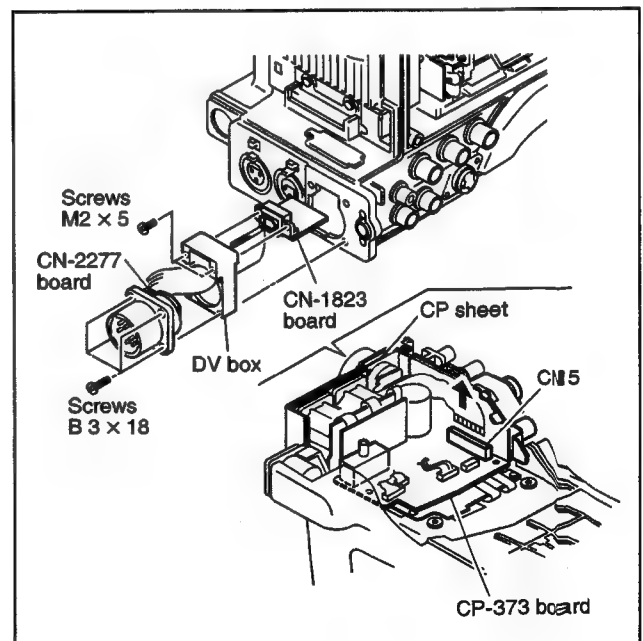
### 2-9-12. CN-2277 and CN-1823 Boards

1. Remove the lower panel. (Refer to Section 2-2-3.)
2. Remove the PS-570 board. (Refer to Section 2-9-11.)
3. Disconnect the flexible card wire (CN5) from the CP-373 board and remove the four screws (B3 × 18).
4. While opening the CP sheet, remove the CN-2277 board.

**Note**

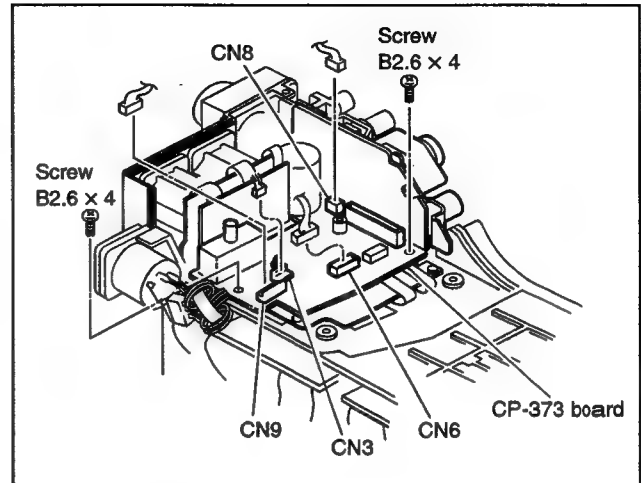
Be careful that the flexible card wire does not touch the chassis to prevent it from damage.

5. Disconnect the connector CN102 on the DV-21C board.  
(Refer to Section 2-9-4.)
6. Remove the two precision screws (M2 × 5), then remove the CN-1823 board.
7. Return the board to its original position with the reverse procedures of removal.

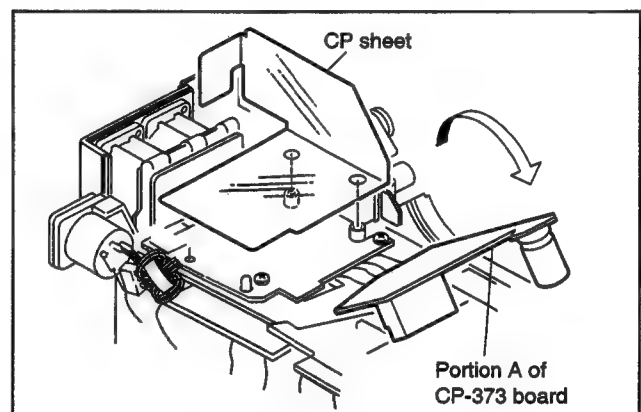


### 2-9-13. CP-373 Board

1. Remove the left panel, right panel, CN-2277 board and PS-570 board.  
(Refer to Sections 2-2-1, 2-2-2, 2-9-11, and 2-9-12.)
2. Disconnect the four connectors (CN3, CN6, CN8 and CN9) and remove the two screws (B2.6 × 4) from the CP-373 board.



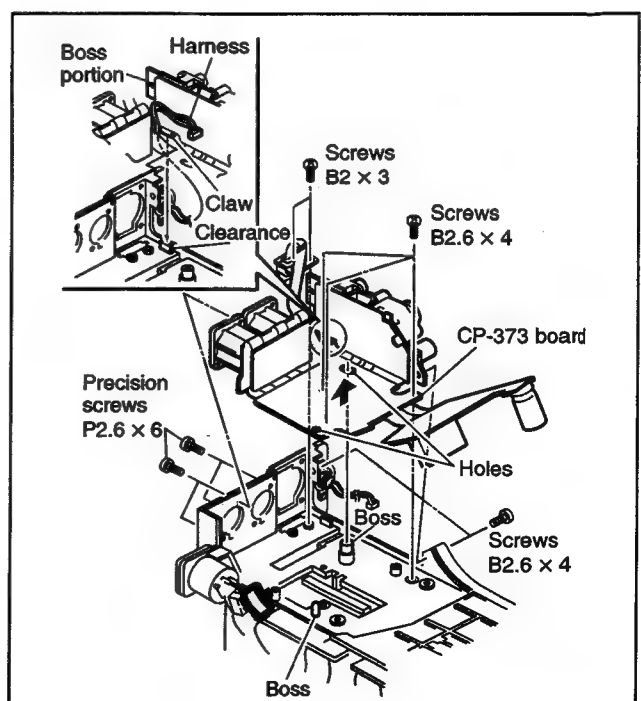
3. While opening Portion A of the CP-373 board in the arrow direction, remove the CP sheet.



4. Remove the eleven screws (B2.6 × 4, precision screw P2.6 × 6 and B2 × 3).
5. Remove the CP-373 board in the arrow direction.
6. Return the board to its original position with the reverse procedures of removal.

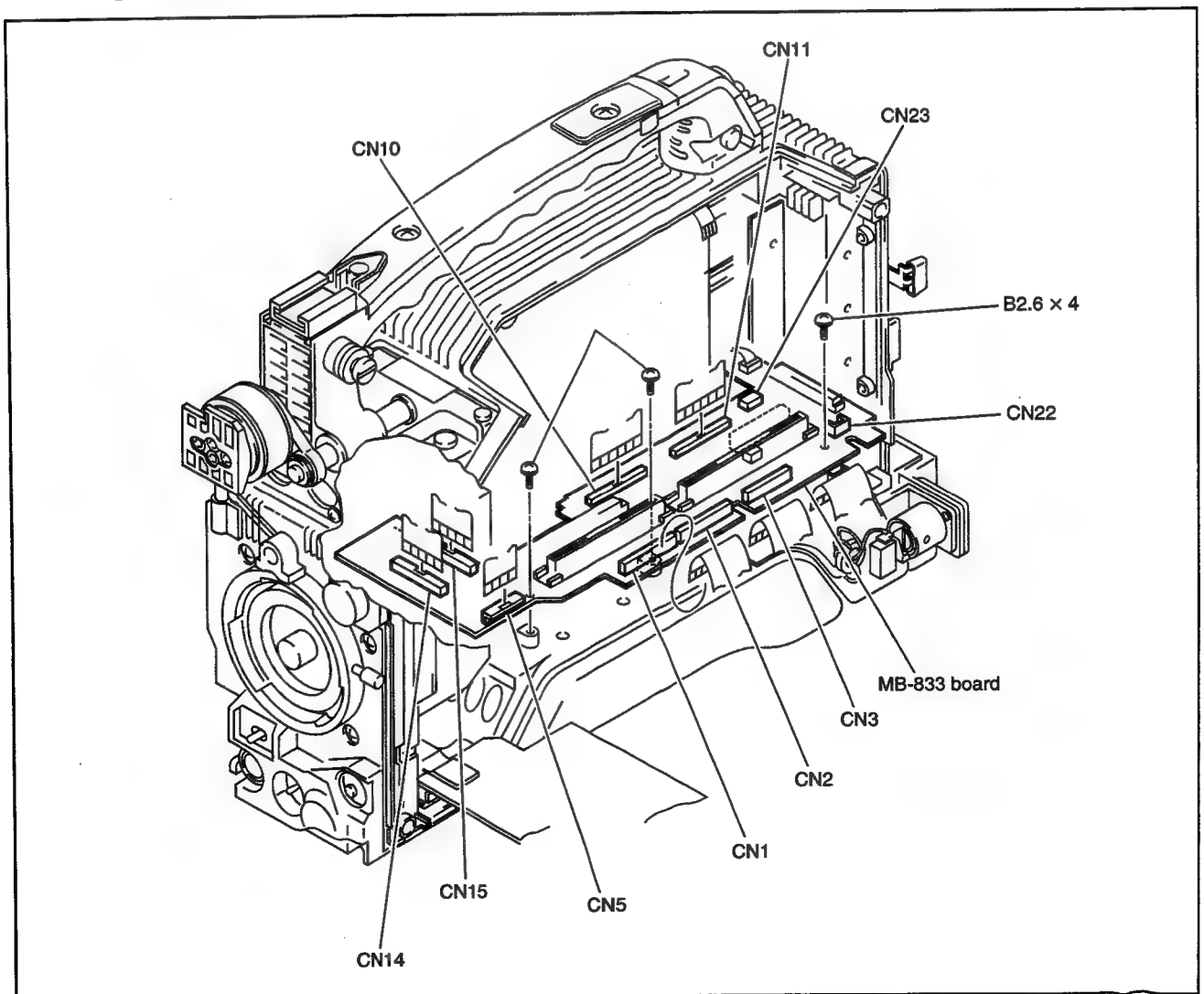
#### Point to notice when attaching the board:

- Be sure to insert the claw into clearance.
- Be sure to pass the harness through underneath boss portion.



## 2-9-14. MB-833 Board

1. Remove the left and right panels.  
(Refer to Sections 2-2-1 and 2-2-2.)
2. Remove the rear panel assembly and DC-DC converter.  
(Refer to Section 2-2-4 and 6-35.)
3. Remove the ES-31/31P, DPR-141C, AT-150, VA-199, CN-2277, PS-570 and CP-373 boards. (Refer to Sections 2-9-4, 2-9-6, 2-9-7, 2-9-11, 2-9-12 and 2-9-13.)
4. Remove the screw (B2.6 × 4) and remove the dust-proof sheet. (Refer to Section 2-9-8.)
5. Disconnect the two connectors (CN22 and CN23) and eight flat cables (CN1, CN2, CN3, CN5, CN10, CN11, CN14 and CN15) from the MB-833 board.
6. Remove the three screws (B2.6 × 4) and remove the MB-833 board.
7. Return the board to its original position with the reverse procedures of removal.

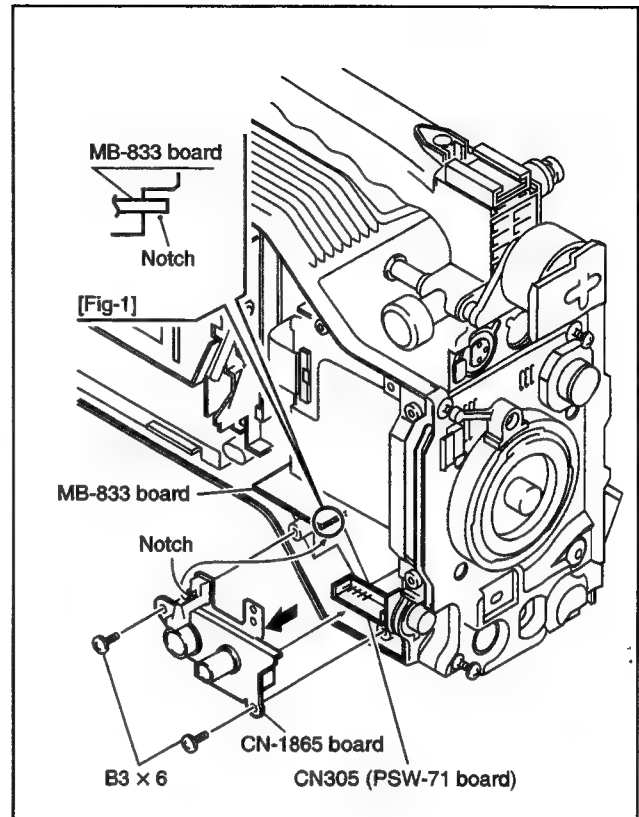


### 2-9-15. CN-1865 Board

1. Remove the left panel and remove the AT-150 board.  
(Refer to Sections 2-2-1 and 2-9-6.)
2. Remove the two screws (B3 × 6) and remove the CN-1865 board in the arrow direction.
3. Return the board to its original position with the reverse procedures of removal.

**Point to notice when attaching the board:**

Align the MB-833 board with notch and insert the CN-1865 board to CN305 on the PSW-71 board.  
(Refer to Fig-1)

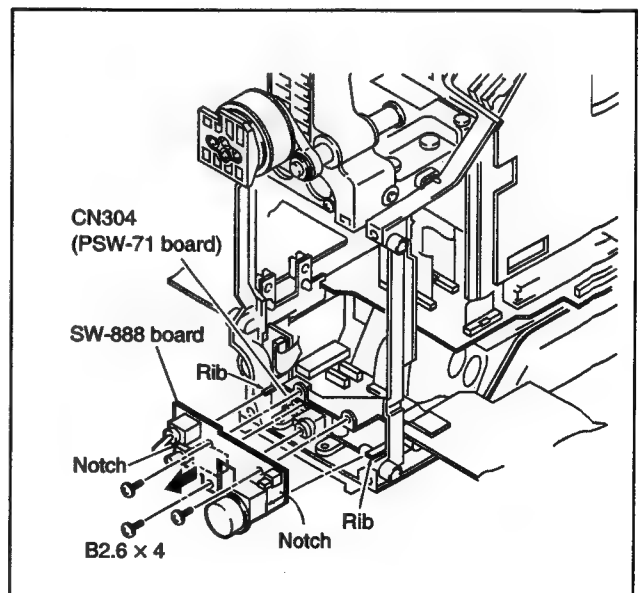


### 2-9-16. SW-19 Board

1. Remove the front unit assembly. (Refer to Section 6-34.)
2. Remove the three screws (B2.6 × 4) and remove the SW-19 board in the arrow direction.
3. Return the board to its original position with the reverse procedures of removal.

**Point to notice when attaching the board:**

Align the two notches with ribs and insert the SW-19 board to CN304 on the PSW-71 board.

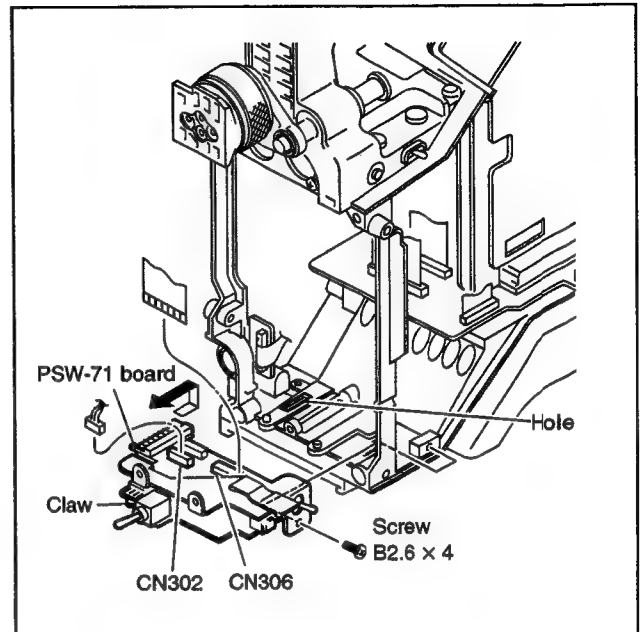


### 2-9-17. PSW-71 Board

1. Remove the CN-1865 and SW-19 boards.  
(Refer to Sections 2-9-15 and 2-9-16.)
2. Remove the screw (B2.6 × 4).
3. Disconnect the flat cable (CN306) and connector (CN302) from the PSW-71 board, and remove the PSW-71 board in the arrow direction.
4. Return the board to its original position with the reverse procedures of removal.

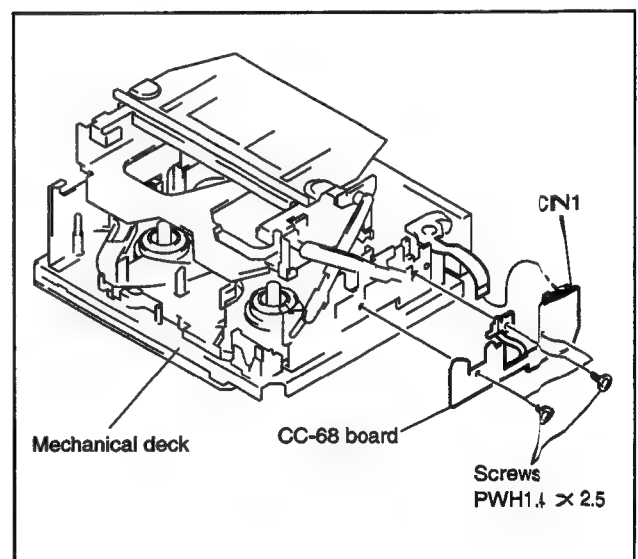
#### Point to notice when attaching the board:

Be sure to hook the claw to the hole.



### 2-9-18. CC-68 Board

1. Remove the mechanical deck. (Refer to Section 2-8.)
2. Disconnect the flexible card wire (CN1) from the CC-68 board.
3. Remove the two screws (PWH1.4 × 2.5) and remove the CC-68 board.
4. Return the board to its original position with the reverse procedures of removal.

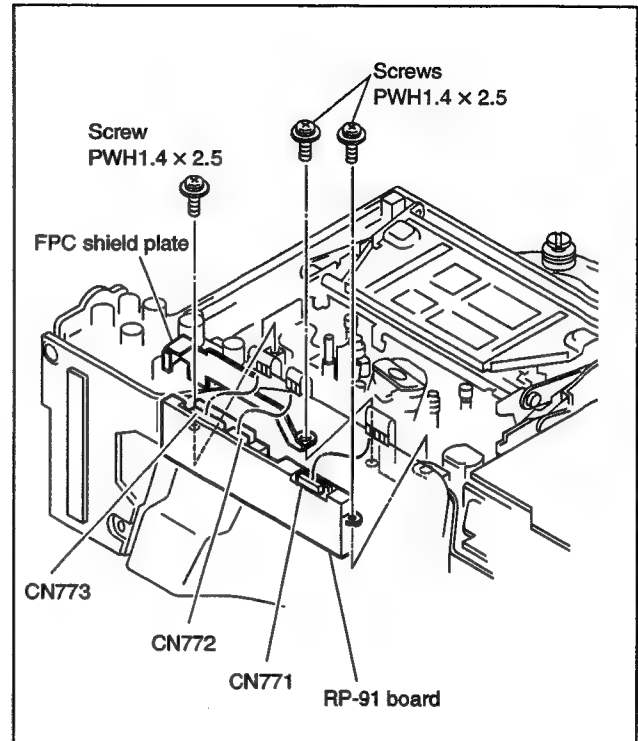


## 2-9-19. RP-91 Board

1. Remove the left panel. (Refer to Section 2-2-1.)
2. Disconnect the flexible card wire (CN771) and the two flat cables (CN772 and CN773).
3. Remove the three screws (PWH1.4 × 2.5) and remove the FPC shield plate and the RP-91 board.
4. Return the board to its original position with the reverse procedures of removal.

### Note

Be sure to perform Section 10-3-4 "AUTO EQ Adjustment" after replacing the RP-91 board.



## 2-9-20. CN-1811 Board

1. Remove the left panel and cassette compartment lid. (Refer to Section 2-2-1.)
2. Disconnect the connectors from the AT-150 and MB-833 boards and remove the CN-1811 flexible board.

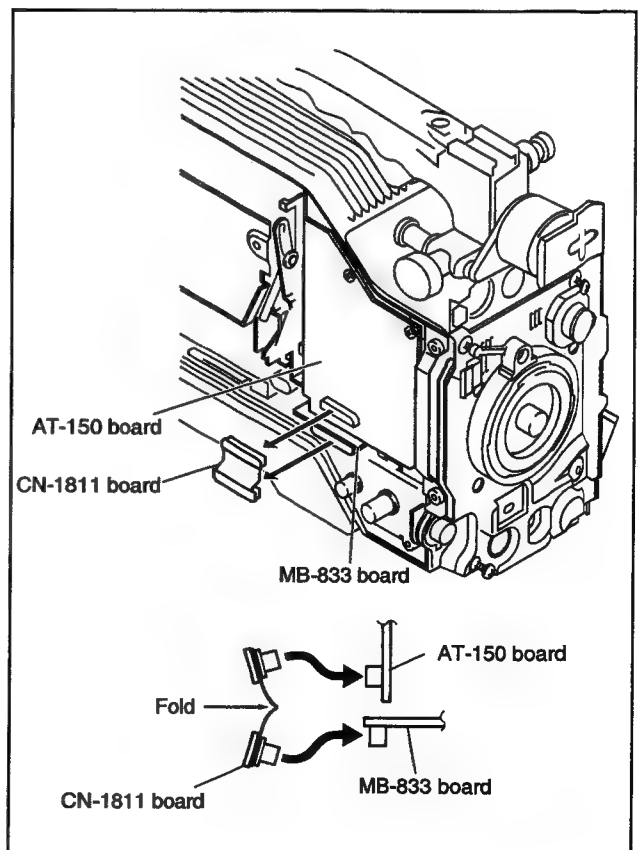
### Note

When removing, take care that the connector of CN-1811 flexible board is not twisted.

3. Return the board to its original position with the reverse procedures of removal.

### Point to notice when attaching the board:

When attaching a new one, make a fold at the central part of the CN-1811 flexible board in the direction shown in the figure.



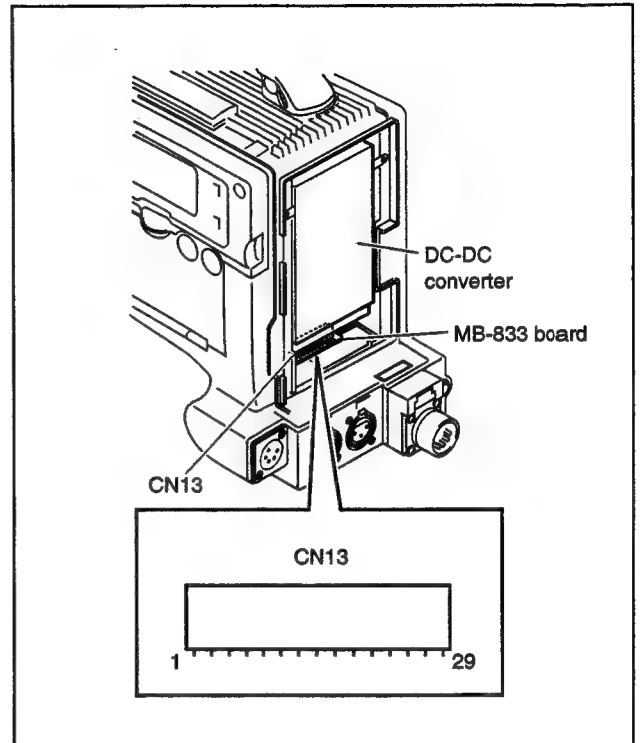
## 2-10. DC-DC Converter Voltage Confirmation

Output voltages of the DC-DC converter can be checked at the test points on the MB-833 board and front MIC connector.

- Connector CN13 of MB-833 Board

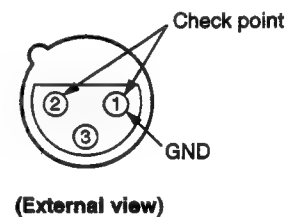
To measure the voltages, remove the four screws and open the rear panel.

Check point	Voltage
Pin 1	SWD EXT DC
Pin 3	UNREG GND
Pin 7	+3.4 V
Pin 9	+3.1 V
Pin 13	−5 V
Pin 15	+5.0 V
Pin 17	+5.3 V
Pin 19	+6.6 V
Pin 21	+9.0 V
Pin 25	+6.0 V
Pin 29	+16.1 V



- Front MIC Connector

Check point	Voltage
Pin 2/Pin 1 (GND)	+48 V



## 2-11. Connecting Connectors

When connecting cables to connectors in installation and servicing, attach the following connectors or equivalent product to the tip of the cables.

Panel display	Connecting connector
CH-1/CH-2 AUDIO IN (+48 V)	1-508-084-00 CONNECTOR, XLR 3P, MALE
DC IN	1-508-362-00 CONNECTOR, XLR 4P, FEMALE
TC IN/OUT	1-560-069-11 CONNECTOR, BNC, MALE
GENLOCK IN	1-560-069-11 CONNECTOR, BNC, MALE
MONITOR OUT	1-560-069-11 CONNECTOR, BNC, MALE
EAR PHONE	PLUG, MINI, STEREO
DC OUT (+12 V)	1-566-425-11 PLUG, 4P, MALE
CH-1/CH-2 AUDIO OUT	1-506-311-00 RCA PIN, MALE
S-VIDEO OUT	S-VIDEO CONNECTOR CABLE (Option): YC-30 V (3 m) YC-15 V (1.5 m)
REMOTE (10P, FEMALE)	1-506-522-11 CONNECTOR, ROUND 10P, MALE HIROSE HR 10A-10P-10P or equivalent or CCA-7-20 Cable assembly (Sold separately)
VIDEO OUT (BNC)	1-560-661-11 PLUG, BNC
LENS (12P, FEMALE)	1-564-360-11 CONNECTOR, 12P, MALE HIROSE HR 10-10PA-12P or equivalent
MIC (3P, FEMALE)	1-508-084-31 CONNECTOR, 3P, MALE CANNON XLA-3-12C or equivalent
VF (20P, FEMALE)	1-778-661-11 CONNECTOR, 20P, MALE HIROSE HR 12-14PA-20PC or equivalent
VTR/CCU (26P, MALE)	1-564-184-21 PLUG, CONNECTOR (SOCKET) 26P FEMALE • For 14P-VTR use CCZQ-A2 (2 m) CCZQ-A5 (5 m) CCZQ-A10 (10 m) • For 26P-VTR use CCZ-A2 (2 m) CCZ-A5 (5 m) CCZ-A10 (10 m) CCZ-A25 (25 m)* CCZ-A50 (50 m)* CCZ-A100 (100 m)*

Panel display	Connecting connector
WRR (7P, FEMALE)	1-569-200-11 CONNECTOR, 7P, MALE
BATTERY (5P, MALE)	1-784-815-11 PLUG, 5P, FEMALE
I.LINK.	DV Cable (6P-4P) : CCFD-3L DV Cable (6P-6P) : CCF-3L

\* : When CCU is connected.



## 2-12. Input/Output Signals of Connectors

### Inputs

GENLOCK IN: BNC type  
1.0 Vp-p, 75  $\Omega$ , sync negative

TC IN: BNC type  
0.5 to 18 Vp-p, 10 k $\Omega$

AUDIO 1/2 IN: XLR 3P  
– 60 dBu,  $Z_i \geq 3$  k $\Omega$  / + 4 dBu,  
10 k $\Omega$  balanced

### Outputs

MONITOR OUT: BNC type

VIDEO OUT: BNC type  
1.0 Vp-p, 75  $\Omega$ , sync negative

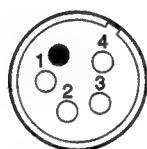
TC OUT: BNC type  
1.0 Vp-p, 75  $\Omega$

EAR PHONE: – $\infty$  to –15.5 dBu variable, 8  $\Omega$   
(Stereo mini jack)

AUDIO 1/2: RCA PIN –10 dBu, 47 k $\Omega$

i.LINK: 6P, IEEE 1394

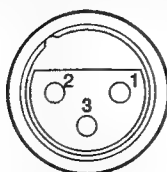
### DC IN (4P, MALE)



(External view)

Pin No.	Signal	Specification
1	EXT DC IN (G)	GND
2	—	—
3	—	—
4	EXT DC IN (X)	+11 to +17 Vdc

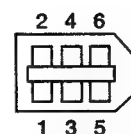
### CH-1/CH-2 AUDIO IN (+48 V) (3P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	MIC IN (G)	GND
2	MIC IN (X)	–60 dBu $Z_i \geq 3$ k $\Omega$ /+4 dBu, 10 k $\Omega$
3	MIC IN (Y)	BALANCED

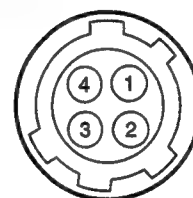
### i.LINK (6P)



(External view)

Pin No.	Signal
1	VP
2	VG
3	TPB*
4	TPB
5	TPA*
6	TPA

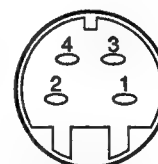
### DC OUT (4P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	EXT DC OUT (G)	GND
2	—	—
3	—	—
4	EXT DC OUT (X)	+11 to +17 Vdc

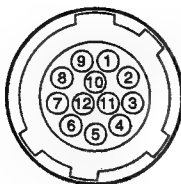
### S-VIDEO (4P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	Y (G)	Y: 1.0 Vp-p, 75 $\Omega$ , sync negative
2	C (G)	C: For DSR-390/370 0.286 Vp-p (burst level), 75 $\Omega$
3	Y (X)	For DSR-390P/370P 0.3 Vp-p (burst level), 75 $\Omega$
4	C (X)	

## LENS (12P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	RET SW IN	ON: $0 \pm 0.5$ Vdc
2	VTR START/STOP IN	TRIG: $0 \pm 0.5$ V
3	POWER +12 V DC GND	GND for +12 Vdc
4	COMPULSORY AUTO IRIS CONT OUT	AUTO: $4.5 \pm 0.5$ V MANU: $0 + 0.5$ V or OPEN
5	IRIS CONT OUT	F16: 3.4 Vdc F2.8: 6.2 Vdc
6	POWER +12 V DC OUT	10.6 V to 17.0 Vdc
7	IRIS POSI IN	F16: $3.4 \pm 0.1$ Vdc F2.8: $6.2 \pm 0.1$ Vdc
8	REMOTE/LOCAL OUT	REMOTE: 5 V LOCAL: 0 V
9	EXTND ON/OFF IN	
10	ZOOM POSI IN	
11	(SPARE)	
12	(SPARE)	

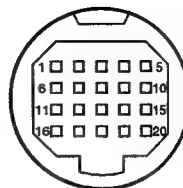
## MIC (3P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	MIC (G) IN	GND for MIC
2	MIC (X) IN	-60 dB BALANCED
3	MIC (Y) IN	(0 dB = 0.775 V)

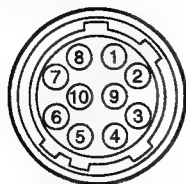
## VF (20P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	PEAKING CONT IN	$Z_i \geq 5 \text{ k}\Omega$
2	POWER +12 V DC OUT	10.6 V to 17.0 Vdc
3	REC TALLY IND OUT	$Z_o \leq 500 \Omega$
4	BATT IND OUT	$Z_o \leq 1.1 \text{ k}\Omega$
5	ZEBRA SW IN	ON: $0 \pm 0.5$ V
6	VF VIDEO (X) OUT	$V = 1.0 \text{ Vp-p}$
7	POWER +12 V DC OUT	10.6 V to 17.0 Vdc
8	(SPARE)	
9	(SPARE)	
10	SDA (VF) OUT	$Z_o \leq 500 \Omega$ , 5 Vp-p
11	VF VIDEO (G) OUT	GND for VF VIDEO
12	POWER +12 V DC GND	GND for +12 Vdc
13	(SPARE)	
14	CHRA ON/OFF	GND or OPEN
15	SCL (VF) OUT	$Z_o \leq 500 \Omega$ , 5 Vp-p
16	R-Y (VF) OUT	$V = 830 \text{ mV}$
17	POWER +12 V DC GND	GND for +12 Vdc
18	B-Y (VF) OUT	$V = 830 \text{ mV}$
19	SYNC (VF) OUT	$V = 5 \text{ Vp-p}$
20	LD (VF) OUT	$Z_o \leq 500 \Omega$ , 5 Vp-p

## REMOTE (10P, FEMALE)



(External view)

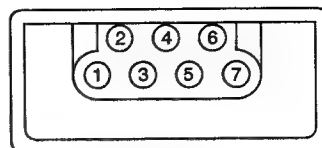
- When connecting the RM-M7G or RCP-TX7

Pin No.	Signal	Specification
1	VJ CONNECT	5.0 V
2	VBS (RM) (OUT)	1.0 V <sub>p-p</sub> , SYNC NEGATIVE
3	VBS (RM) (OUT)	
4	RS232C (C/RM) IN	
5	VTR START/STOP IN	Z <sub>i</sub> ≥ 10 kΩ └..... OPEN (4.5 ± 0.5 V) └..... 0 ± 0.5 V
6	S.DATA (X)	0 to 5 V Z <sub>i</sub> ≥ 10 kΩ
7	RS232C (RM/C) OUT	GND for S.DATA
8	REC TALLY IND OUT	Z <sub>o</sub> ≥ 600 Ω
9	POWER +12 V DC GND	GND for +12 Vdc
10	POWER +12 V DC OUT	10.6 V to 17.0 Vdc

- When connecting the RM-VJ1

Pin No.	Signal	Specification
1	VJ CONNECT	5.0 V
2	VBS (RM) OUT	1.0 V <sub>p-p</sub> , SYNC NEGATIVE
3	VBS (RM) OUT	
4	AUDIO (Y) IN	-30 dB BALANCED
5	AUDIO (X) IN	
6	RS232C (C/RM) IN	
7	RS232C (RM/C) OUT	
8	REC TALLY IND OUT	Z <sub>o</sub> ≥ 60 Ω
9	POWER +12 V DC GND	GND for +12 Vdc
10	POWER +12 V DC OUT	10.6 V to 17.0 Vdc

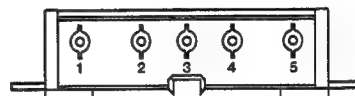
## WRR (7P, FEMALE)



(External view)

Pin No.	Signal	Specification
1	WIRELESS GND	
2	AF OUTPUT (X)	-40 dBu BALANCED Z <sub>i</sub> ≥ 3 kΩ
3	AF OUTPUT (Y)	
4	INCOM (G)	
5	INCOM (Y)	Z <sub>o</sub> = 600 Ω
6	INCOM (X)	
7	POWER +12 V DC OUT	10.6 V to 17.0 Vdc

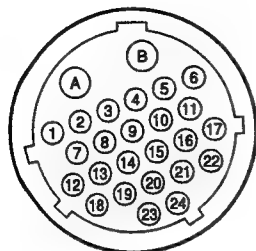
## BATTERY (5P, MALE)



(External view)


Pin No.	Signal	Specification
1	BATTERY	GND
2	BATTERY CONT	Z <sub>o</sub> ≤ 500 Ω
3	BATTERY REMAIN	Z <sub>o</sub> ≤ 500 Ω
4	BATTERY ID	Z <sub>i</sub> ≥ 10 kΩ
5	BATTERY (+)	+12 V DC IN 10.6 V to 17.0 V

# VTR/CCU (26P, MALE)



(External view)

Pin No.	Signal	Specification
A	EXT DC (CCZ) IN (X)	Sensing for power save circuit (ES-31/31P)
B	EXT DC IN (G)	—
1 *1	EN/Y VIDEO OUT (X)	VBS/Y = 1.0 Vp-p ±1 dB (100 %) Zo = 75 Ω ±5 % DC = 0 ±100 mV
2 *1	EN/CF/CHROMA (G)	GND for ADP VIDEO
3 *1	Y OUT (G)	GND for Y
4 *1	Y OUT (X)	VS = 1.0 Vp-p ±0.5 dB (100 %) Zo = 75 Ω ±5 % DC = 0 ±200 mV
5 *1	R-Y OUT (X)	VS = 756 mVp-p ±2 % [for DSR-390/370] 525 mVp-p ±2 % [for DSR-390P/370P] (75 % COLOR BARS) Zo = 75 Ω ±5 % DC = 0 ±200 mV
6 *1	R-Y OUT (G)	GND for R-Y
7 *1	B-Y OUT (X)	VS = 756 mVp-p ±2 % [for DSR-390/370] 525 mVp-p ±2 % [for DSR-390P/370P] (75 % COLOR BARS) Zo = 75 Ω ±5 % DC = 0 ±200 mV
8 *1	B-Y OUT (G)	GND for B-Y
9	MIC OUT (X)	−60 dBm/−20 dBm Zo ≤ 600 Ω
10	MIC OUT (Y)	BALANCED
11	MIC OUT (G)	GND for MIC
12	VTR START/STOP OUT TALLY OUT	START: 4.5 ±0.5 V STOP: 0 ±0.5 V Zo ≤ 10 kΩ
13 *2	BATT IND IN	Zi ≥ 300 Ω (Note 1)
14	(SPARE)	—
15	REC ALARM IN	Zi = 20 kΩ (Note 2)
16	(SPARE)	—
17 *2	AUDIO MONITOR IN (G)	GND for AUDIO MONITOR
18	RET/PB VIDEO IN (X)	Zi = 75 Ω ±5 % VS = 1.0 Vp-p ±1 % (100 %) DC = 0 ±200 mV

Pin No.	Signal	Specification
19	RET/PB VIDEO IN (G)	GND for PB VIDEO
20	AUDIO MONITOR IN (X)	Zi = 750 Ω (1 kHz) SAVE: 4.5 ±0.5 V STANDBY: 9.0 ±1.0 V −0.5 V Zo ≥ 10 kΩ
21 *2	(SPARE)	—
22 *1, *2	CF/CHROMA OUT (X)	CF:  5.0 ±1.0 Vp-p Zo = 1 kΩ ±5 % DC = 0 ±200 mV CHROMA: 286 mVp-p [for DSR-390/370] 300 mVp-p [for DSR-390P/370P] Zo = 75 Ω DC = 0 ±200 mV
23 *2	(SPARE)	—
24 *2	(SPARE)	—

\*1 : Selection with EXT VTR output switch



	COMPONENT VBS	Y/C
1	EN VIDEO OUT (X)	Y OUT (X)
2	EN VIDEO/CF OUT (G)	Y/CHROMA OUT (G)
3	Y OUT (G)	—
4	Y OUT (X)	—
5	R-Y OUT (X)	—
6	R-Y OUT (G)	—
7	B-Y OUT (X)	—
8	B-Y OUT (G)	—
22	CF OUT (X)	CHROMA OUT (X)

\*2 : When CCU is connected

Pin No.	Signal	Specification
13	S_DATA_IN/OUT	—
17	INCOM_(G)	—
21	INCOM_(X)	Zo = 600 Ω
22	INCOM_(Y)	Zo = 600 Ω
23	GENLOCK (G)	—
24	GENLOCK (X)	—

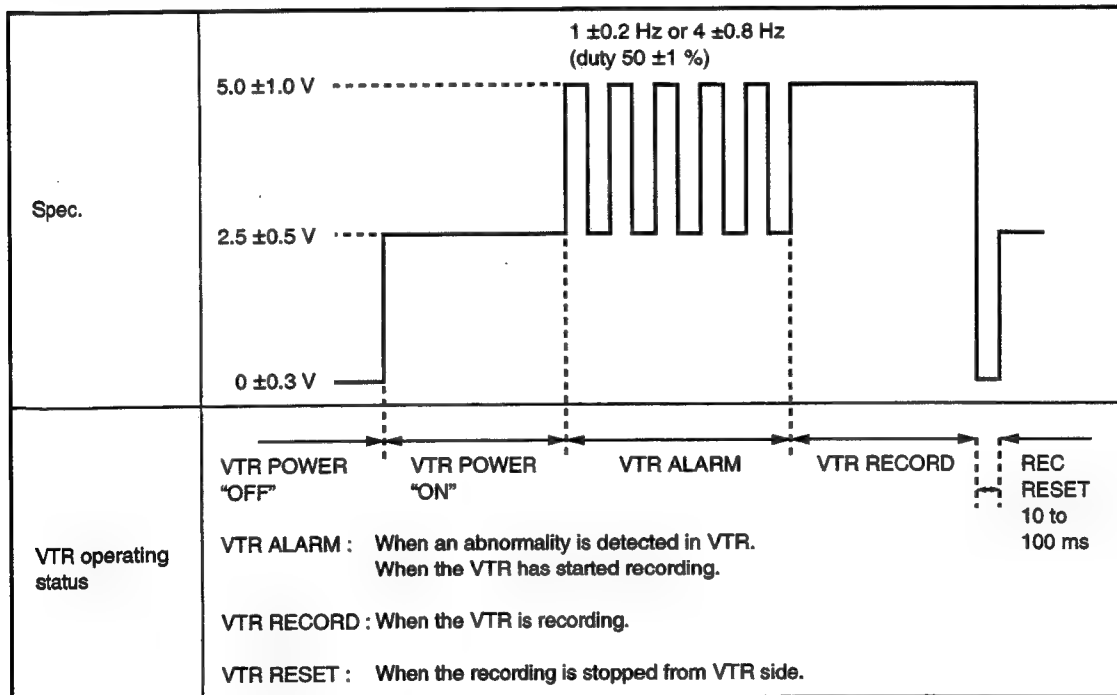
**Note 1****Pin 13 (BATT IND IN)**

The external VTR connected to the external VTR connector (CCZ 26pin) has a battery voltage detection circuit and warning signal output circuit. The circuit informs the camera of the battery voltage drop by sending the following signal to pin 13. The camera uses the LED on the viewfinder to warn the user the condition.

VTR battery voltage	More than 11.1 Vdc	10.8 to 11.1 Vdc	Less than 10.8 Vdc
Spec.	$2.5 \pm 0.5 \text{ V}$ ----- $0 \pm 0.5 \text{ V}$ -----	$1 \pm 0.2 \text{ Hz}$ or $4 \pm 0.8 \text{ Hz}$ (duty $50 \pm 1 \%$ ) 	
LED in viewfinder	Goes out	Blinks	Lights

**Note 2****Pin 15 (REC ALARM IN)**

This signal indicates the operating status of VTR. The specifications of the signal is shown below.



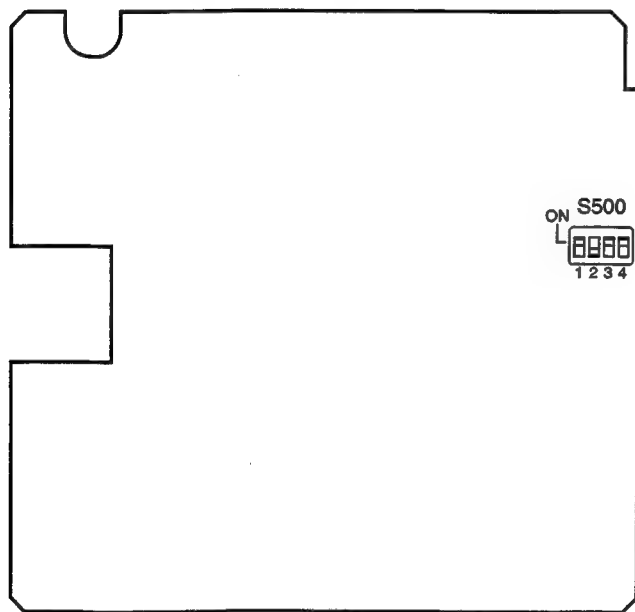
## 2-13. Board Switch and Slit Settings

### 2-13-1. SV-213 Board

#### • S500

Settings at shipment: ☐

1. DESTINATION setting  
☐ ON: NTSC  
 OFF: PAL
2. DESTINATION setting (Effective when pin 1 is on.)  
 ON: UC  
☐ OFF: J
3. DEBUGGING mode setting (for designer)  
☐ ON: At shipment and all times
4. SLACK DETECTION ON/OFF switching  
☐ ON: SLACK mute off  
 OFF: SLACK mute on



SV-213 board (A side)

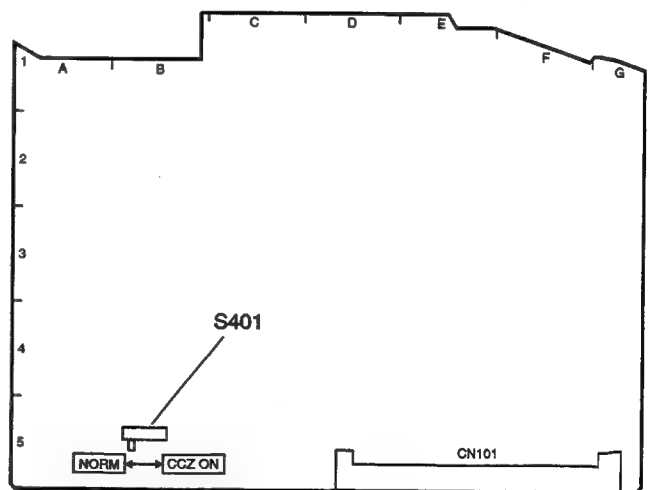
### 2-13-2. ES-31/31P Board

#### • S401 (POWER SAVE)

When S401 is set to "NORM" and no external VTR is connected, current consumption of the unit can be reduced.

**NORM:** Current consumption reduction  
 The power supply circuit (Q419) on the ES-31/31P board is turned ON when the external VTR has been connected to the EXT VTR connector (pin 26) on the rear panel and the power of the external VTR is turned ON. As a result, various signals are outputted from pins 93 to 100 of the ES-31/31P board. Usually, S401 is set to "NORM" position at the factory setting.

**CCZ ON:** Current consumption no-reduction  
 Regardless of the EXT VTR connector's connection, the power supply circuit (Q419) on the ES-31/31P board is always ON, and the various signals are outputted from pins 93 to 100 of the ES-31/31P board.



ES-31/31P board (A side)

## 2-14. Battery Preset and Battery End Voltage Adjustment

This section explains the battery preset adjustments and battery end voltage adjustment.

To perform these adjustments, supply the DC power from an external DC power supply and use the SYSTEM MENU of the unit.

### Note

Perform "Battery Preset Adjustment 1" and "Battery End Adjustment" in order of description.

However, "BP Battery Preset Adjustment 2" can be performed independently.

Settings at shipment: Battery preset voltage: 11.30 V

Battery end voltage: 10.98 V

BP battery preset voltage: 13.00 V

Equipment required: DC power supply, Digital voltmeter, DVCAM cassette tape

Switch settings: LIGHT switch (Right side panel) → OFF

TALLY switch (Rear side) → OFF

OUTPUT/DL/DCC + switch (Right side panel) → BARS

### Setting

1. Remove the bottom panel. (Refer to Section 2-2-3.)
2. Connect the DC power supply to DC IN connector.
3. Insert a cassette tape, and set the unit into the REC mode.

### Notes

- Touch the lead tip of the digital voltmeter to pin 6 (GND) and pin 12 (DC power) of connector CN6 on the CP-373 board as shown in Fig. 1, and adjust the DC power supply to the specified voltage of each item.
- Be careful not to touch the lead tip of the digital voltmeter to the chassis and other connector pins as this may cause a short circuit.

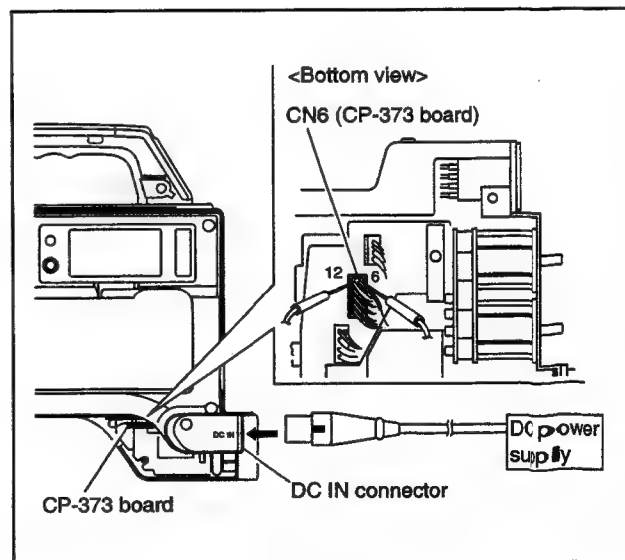


Fig.1

### Battery Preset Adjustment 1

1. Set the SYSTEM MENU (refer to Section 4-1-2), and select the "Battery Preset Adjustment 1 mode (Menu No. 501)" (Refer to Fig. A).
2. Press the RESET (MENU SET) button to blink the voltage displayed on the display window (Fig. B). Adjust the DC power supply so that the digital voltmeter shows 11.30 V (Fig. 1).
3. Press the RESET (MENU SET) button. (The value set will be written in the EEPROM) and "YES" will be displayed when the desired voltage is set (Fig. C). "no" will be displayed when an error occurs while writing in the EEPROM and the value could not be set (Fig. D). In this case, repeat steps 1 to 3.

#### Notes

- Set the voltage as  $11.30 \pm 0.01$  V.
- The voltage value shown on the display window is for reference only.
- If this menu is set by mistake, always press the MENU button to exit from this menu. Never press the RESET (MENU SET) button. When pressing the RESET (MENU SET) button, the data being set will be written.

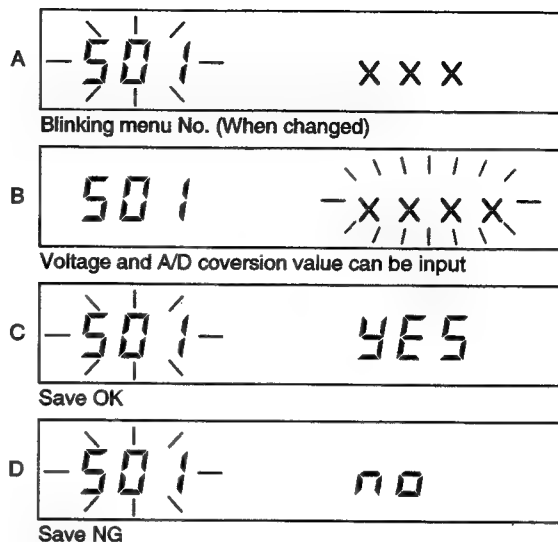
### Battery End Adjustment

1. Set the SYSTEM MENU (refer to Section 4-1-2), and select the "Battery end setting mode (Menu No. 502)" (Refer to Fig. A').
2. Press the RESET (MENU SET) button to blink the voltage displayed on the display window (Fig. B'). Adjust the DC power supply so that the digital voltmeter shows 10.98 V (Fig. 1).
3. Press the RESET (MENU SET) button to write the set value in the EEPROM. "YES" will be displayed when the desired voltage is set (Fig. C'). "no" will be displayed when an error occurs while writing in the EEPROM and the value could not be set (Fig. D'). In this case, repeat steps 1 to 3.

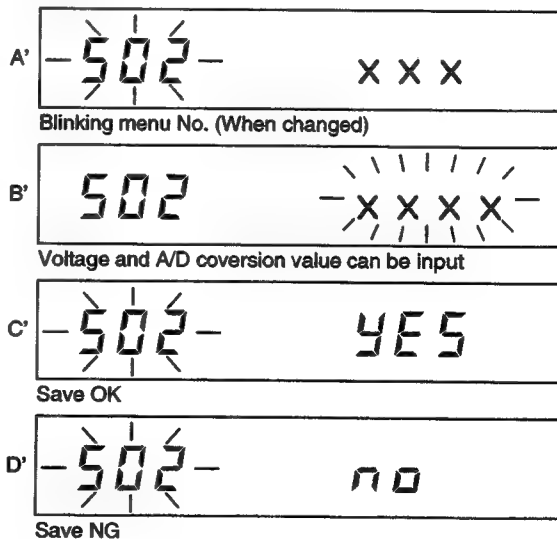
#### Notes

- VTR operations stop according to the battery end voltage set. Set the voltage as  $10.98 \pm 0.01$  V.
- The voltage value shown on the display window is for reference.
- If this menu is set by mistake, always press the MENU button to exit from this menu. Never press the RESET (MENU SET) button. When pressing the RESET (MENU SET) button, the data being set will be written.

Display window (LCD)



Display window (LCD)





### BP Battery Preset Adjustment 2

1. Set the SYSTEM MENU (refer to Section 4-1-2), and select the "BP battery preset adjustment 2 mode (Menu No. 513)" (Refer to Fig. A").
2. Press the RESET (MENU SET) button to blink the voltage displayed on the display window (Fig. B"). Adjust the DC power supply so that the digital voltmeter shows 13.00 V (Fig. 1).
3. Press the RESET (MENU SET) button to write the set value in the EEPROM. "YES" will be displayed when the desired voltage is set (Fig. C"). "no" will be displayed when an error occurs while writing in the EEPROM and the value could not be set (Fig. D"). In this case, repeat steps 1 to 3.

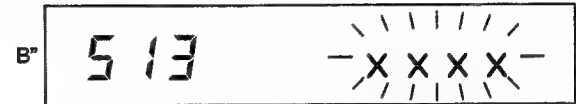
#### Notes

- Set the voltage as  $13.00 \pm 0.01$  V.
- The voltage value shown on the display window is for reference.
- If this menu is set by mistake, always press the MENU button to exit from this menu. Never press the RESET (MENU SET) button. When pressing the RESET button, the data being set will be written.

Display window (LCD)



Blinking menu No. (When changed)



Voltage and A/D conversion value can be input



Save OK



Save NG

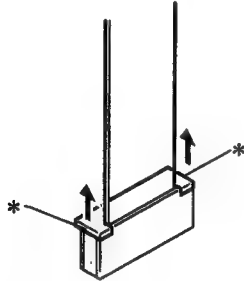
## 2-15. Disconnecting/connecting the Flexible Card Wires/Boards

- Replace the flat cables, flexible card wires and boards as follows:  
Three types of connectors are also used.
- In order to keep the flexible card wire and board longer life, be very careful not to bent them when handling because they are remarkably sensitive.

### Vertical Type Connector

#### • Disconnecting

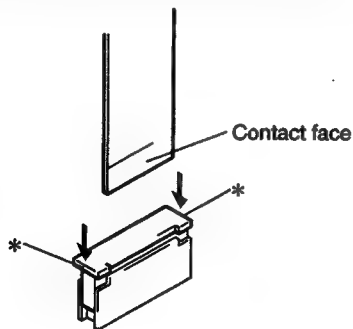
Slide the \* marked section in the arrow direction, release the lock, and disconnect the flexible card wire/ board.



#### • Connecting

Lift up the \* marked sections, and insert the flexible card wire/board in the connector while paying attention to the contacting surface of the flexible card wire/board.

After fully inserting until it goes, push down the \*marked sections to lock the flexible card wire/ board.



#### Note

When lifting up and down the \* marked sections, be sure to hold both ends of connector.

#### • Disconnecting

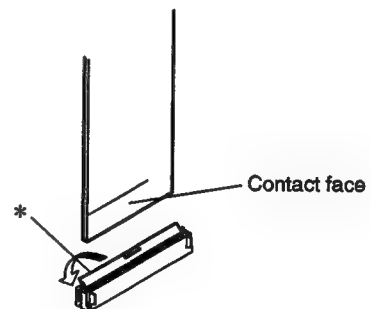
Open the \* marked section in the arrow direction, release the lock, and disconnect the flexible card wire/ board.



#### • Connecting

Lift up the \* marked section, and insert the flexible card wire/board in the connector while paying attention to the contacting surface of the flexible card wire/ board.

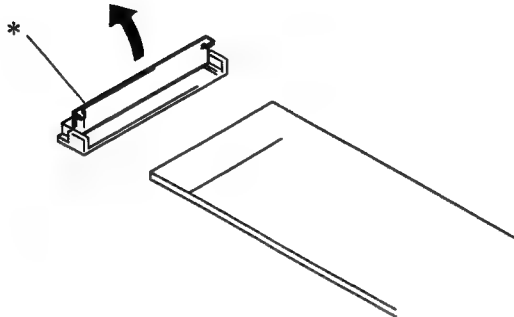
After fully inserting until it goes, push down the \* marked section to lock the flexible card wire/board.



## Horizontal Type Connector

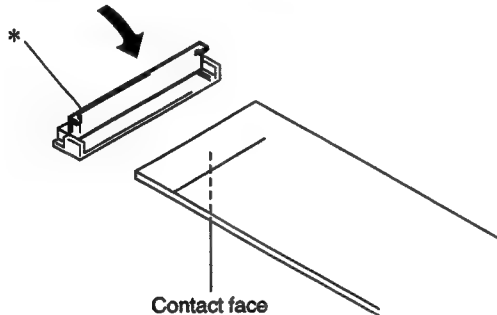
- **Disconnecting**

Open the \* marked section in the arrow direction, release the lock, and disconnect the flexible card wire/board.



- **Connecting**

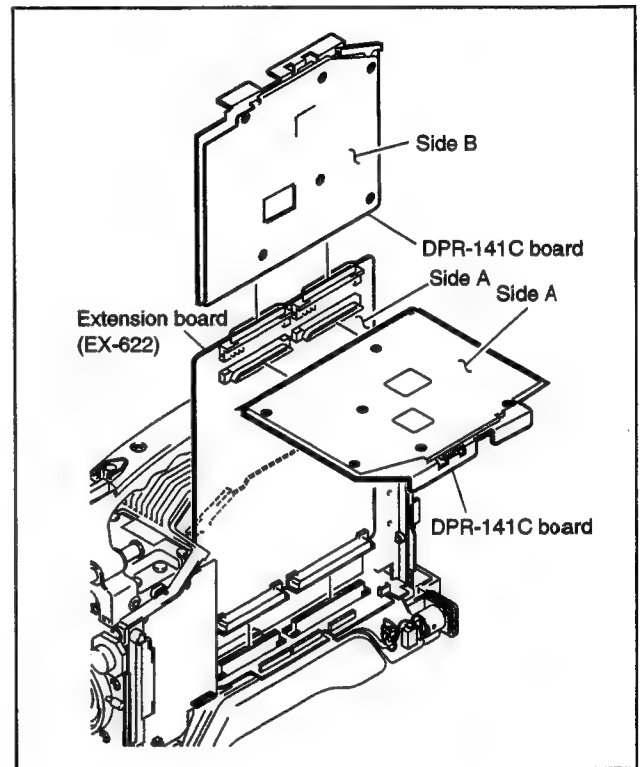
Lift up the \* marked section, and insert the flexible card wire/board in the connector while paying attention to the contacting surface of the flexible card wire/board. After fully inserting until it goes, close the \* marked section to lock the flexible card wire/board.



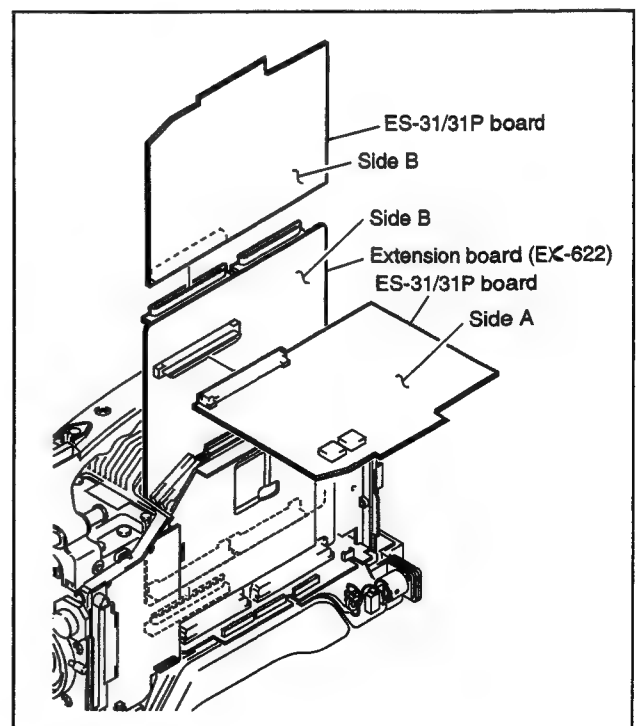
## 2-16. Service Tools and Test Fixtures

### 2-16-1. Attaching the Extension Board EX-622

- In case of the DPR-141C board.

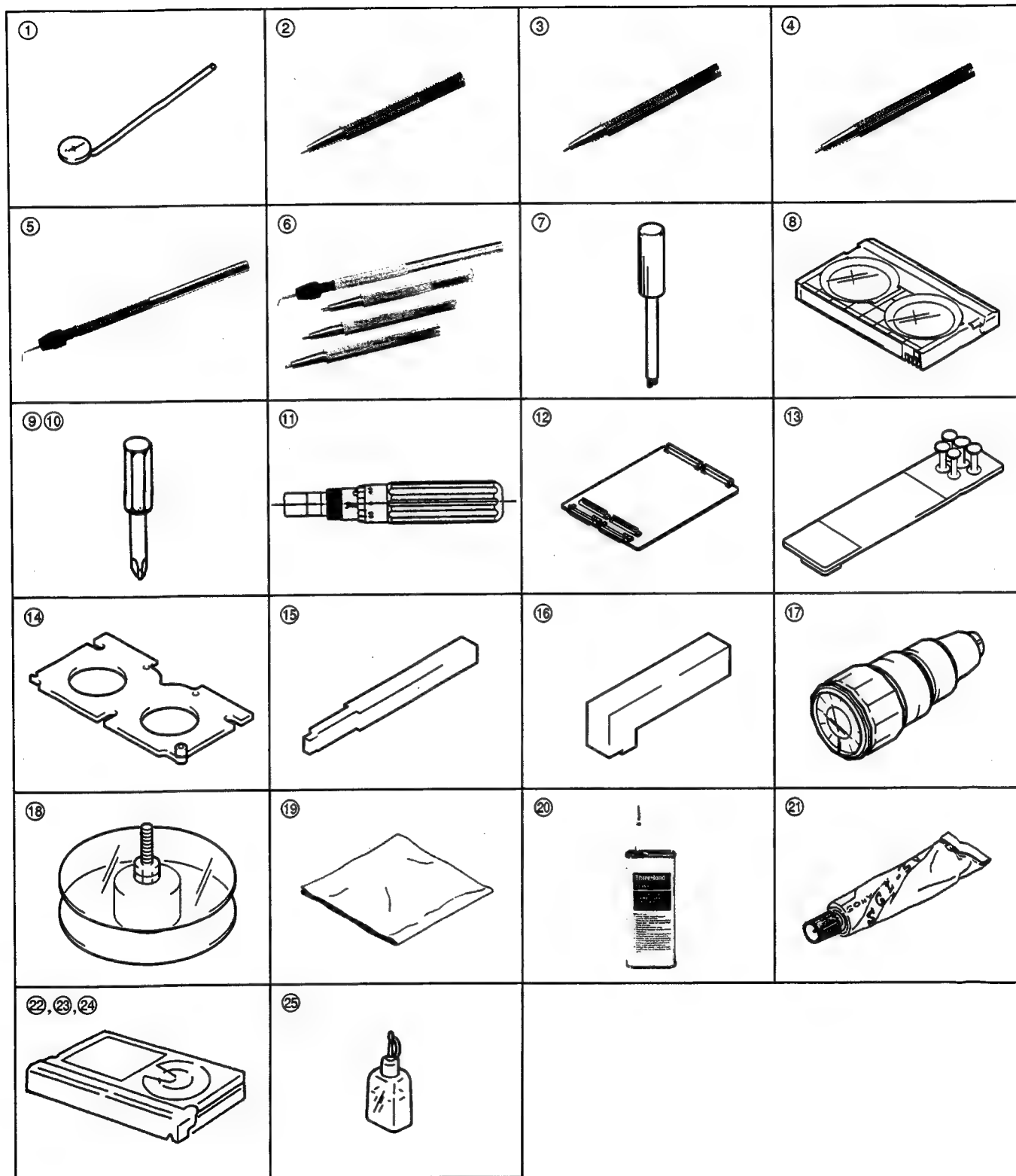


- In case of the ES-31/31P board.



## 2-16-2. Service Tools and Test Fixtures

Fig No.	Part No.	Name	Usage
1	J-6080-029-A	Small adjustment mirror	Video tracking adjustment
2	J-6082-231-A	Washer attaching tool (For 1.5)	Parts replacement
3	J-6082-232-A	Washer attaching tool (For 1.2)	Parts replacement
4	J-6082-233-A	Washer attaching tool (For 0.8)	Parts replacement
5	J-6082-234-A	Washer removing tool A	Parts replacement
6	J-6082-236-A	Washer attaching/removing kit	Parts replacement (Set of No. 2 to No. 5)
7	J-6082-362-A	Tape guide adjusting screwdriver	Tape guide height adjustment
8	J-6082-373-A	Torque cassette	FWD/REV rewinding torque adjustment, FWD back tension adjustment
9	J-6325-110-A	Torque screwdriver bit (For M1.4)	Parts replacement
10	J-6325-380-A	Torque screwdriver bit (For M2)	Parts replacement
11	J-6325-400-A	Torque screwdriver (3 kg)	Tightening screw
12	J-6276-320-A	Extension board, EX-622	ES-31/31P and DPR-141C boards adjustment
13	J-6442-350-A	RF extension board	RF system adjustment, tape path system adjustment
14	J-6442-410-A	Reference plate	Reel table height adjustment, tape guide height adjustment reference plate
15	J-6442-420-A	Guide gauge	Tape guide height adjustment
16	J-6442-430-A	Reel table height check gauge	Reel table height adjustment
17	J-6442-510-A	Torque gauge (90ATG)	FWD/REV rewinding torque adjustment
18	J-6442-520-A	Rewinding torque measuring attachment	FWD/REV rewinding torque adjustment
19	3-184-527-01	Cleaning cloth	Cleaning
20	7-432-114-11	Three bond 1401B	Screw-locking compound
21	7-651-000-10	Grease SGL-601 (50 g)	Parts replacement
22	8-967-999-02	Alignment tape XH2-1AST	Tape path system adjustment
23	8-967-999-21	Alignment tape XH5-1A	Video system adjustment (for DSR-390/370)
24	8-967-999-25	Alignment tape XH5-1AP	Video system adjustment (for DSR-390P/370P)
25	9-919-573-01	Cleaning liquid	Cleaning



## 2-17. Notes on Repair Parts

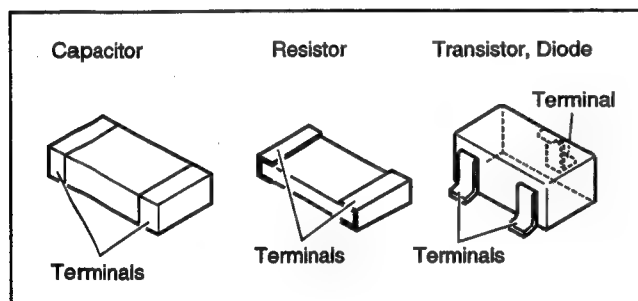
### 2-17-1. Replacement Procedure of Chip Parts

#### Tools Required

- Soldering iron: 20 W. If possible, use a soldering iron tip heat-controller set to  $270 \pm 10^\circ\text{C}$ .
- Braided wire: Solder Taul or equivalent (Sony Part No. : 7-641-300-81)
- Solder: 0.6 mm diameter is recommended.
- Tweezers

#### Soldering Conditions

- Soldering iron temperature:  $270 \pm 10^\circ\text{C}$
- Soldering time: Less than 2 seconds per pin



#### Replacement of Resistor and Capacitor

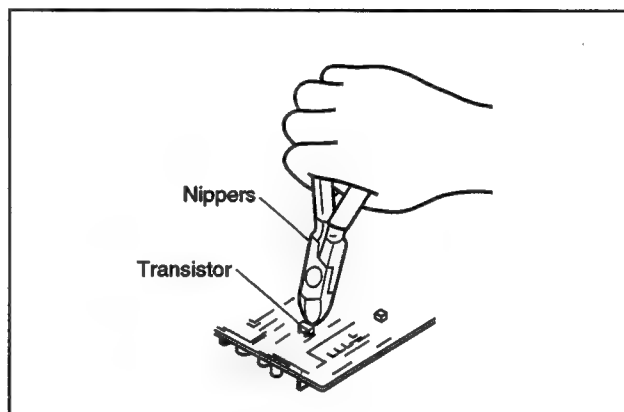
1. Place the soldering-iron tip onto the chip part and heat it up until the solder is melted. When the solder is melted, slide the chip part aside.
2. Make sure that there is no pattern peeling, damage and/or bridge around the desoldering positions.
3. After removing the chip part, presolder the area, in which the new chip part is to be placed, with a thin layer of solder.
4. Place the new chip part at the desired position and solder both ends.

#### Note

Do not use chips parts that have been removed once.

#### Replacement of Transistors and Diodes

1. Cut the terminals of the chip part with nippers.
2. Remove the cut leads with soldering iron.
3. Make sure that there is no pattern peeling, damage and/or bridge around the desoldering positions.
4. After removing the chip part, presolder the area, in which the new chip part is to be placed, with a thin layer of solder.
5. Place the new chip part at the desired position and solder the terminals.



#### Replacement of ICs

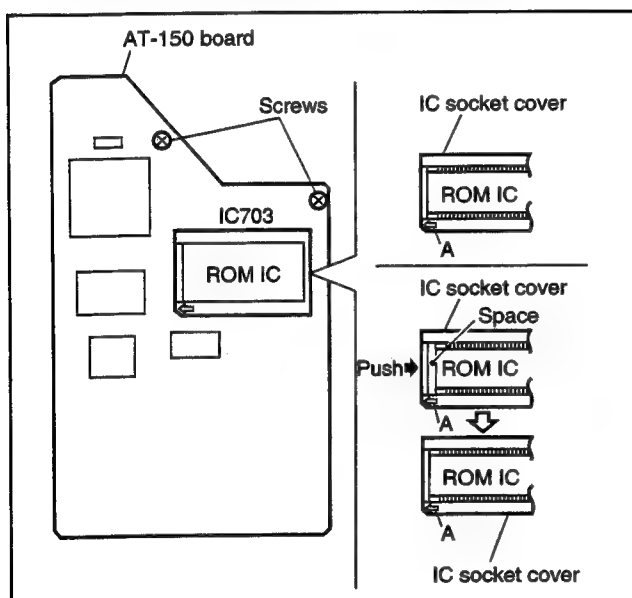
1. Using the braided wire, remove the solder around the pins of the IC-chip to be removed.
2. While heating up the pins, remove the pins one by one using tweezers and equivalent.
3. Make sure that there is no pattern peeling, damage and/or bridge around the desoldering parts.
4. After removing the chip part, presolder the area, in which the new chip part is to be placed, with a thin layer of solder.
5. Place the new chip part at the desired position and solder the terminals.

## 2-17-2. Replacing the ROM (IC703/AT-150 Board)

### Note

When replacing the ROM, remove the two screws, open the AT-150 board, and remove the IC socket cover while pushing the back side of ROM.

- ① Remove the IC socket cover by pushing it in the arrow direction until clicking.
- ② Replace the former ROM by a new one.
- ③ Put the IC socket cover while keeping some space at the arrow A side.
- ④ While pushing the ROM, push the IC socket cover in reverse direction of arrow A until it clicks.



## 2-17-3. Initializing Procedure for EEPROM

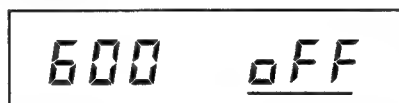
1. Set the maintenance menu, and select Menu No. 75X.

- (1) Press the MENU button while pressing the SHIFT button, then release the SHIFT button first, and release the MENU button after pressing more than 1 second. The following message will be displayed on the display window (LCD). (Characters underlined on the display window (LCD) in the following operations hereafter indicate that they are blinking.)



- (2) Press the RESET (MENU SET) button once to blink "oFF".

The following message will be displayed on the display window (LCD).



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on."
- The following message will be displayed on the display window (LCD).



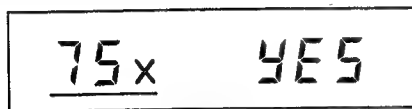
Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.
- The following message will be displayed on the display window (LCD).

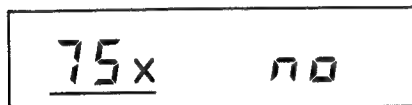


Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- The following message will be displayed on the display window (LCD).



If the following message is displayed on the display window (LCD), it indicates the data, which was written by the powered on the last time, cannot be used properly. In this case, press the MENU button to exit from the maintenance menu, turn off the power and replace each old EEPROM which attached on the boards.



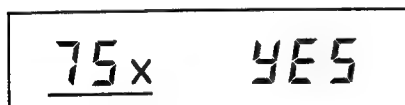
2. Press the RESET (MENU SET) button.  
Check that the following message will be displayed on the display window (LCD).



Each time the ADVANCE button is pressed, "SEt" and "ESC" will blink alternately.

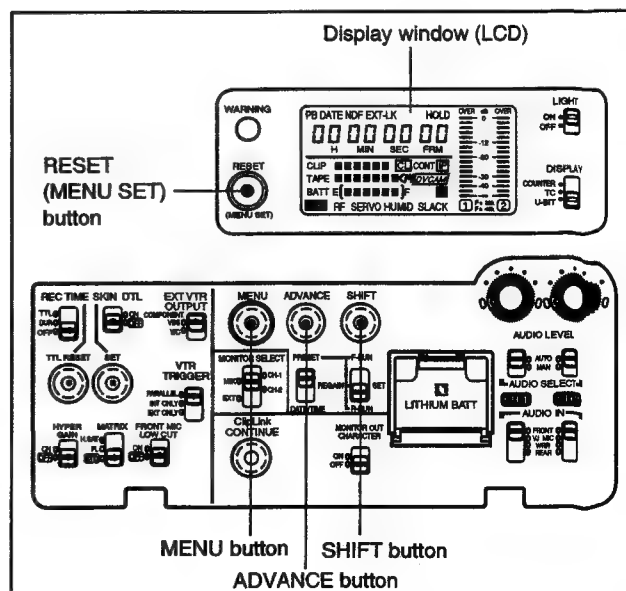
To cancel, press the **RESET (MENU SET)** button when "ESC" is displayed.

3. Press the RESET (MENU SET) button once.  
Check that the following message will be displayed on the display window (LCD).



If "no" is displayed on the display window (LCD), exit from Menu No. 75X once, and perform the above procedure again. If the display does not change, check if the adjacent circuitry of EEPROM of the each boards are abnormal, and replace each old EEPROM which attached on the boards.

4. Press the MENU button to exit from the maintenance menu. The display window (LCD) will return to the state before the maintenance menu was displayed.






## 2-17-4. KY EEPROM Echo Back Data Preset Procedure

### Notes

- Because data may be lost when replacing the board and EEPROM, note down following menu No. settings before performing the replacement.  
(Menus which should be noted down.)  
No. 201, 204, 206, 207, 211 to 214, 220, 308, 401, 402, 405, 406, 501 to 503 and 513  
(However, the hours meter cannot be reset.)  
For details of the menus, refer to 4-1. Menu.
- Be sure to preset this data after replacing the FP-118A board and EEPROM (IC204) on the FP-118A board.

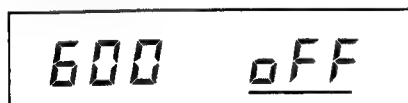
1. Set the maintenance menu, and select Menu No. 752.

- (1) Press the MENU button while pressing the SHIFT button, then release the SHIFT button first, and release the MENU button after pressing more than 1 second. The following message will be displayed on the display window (LCD). (Characters underlined on the display window (LCD) in the description of operations hereafter indicate that they are blinking.)



- (2) Press the RESET (MENU SET) button once to blink "oFF".

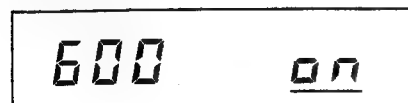
The following message will be displayed on the display window (LCD).



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on."

The following message will be displayed on the display window (LCD).



Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.

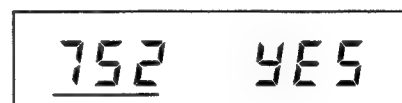
The display window (LCD) will display as follows.



Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button several times to display Menu No. 752.

The following message will be displayed on the display window (LCD).



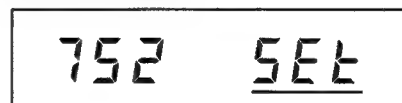
If the following message will be displayed on the display window (LCD), it indicates the data, which was written by the powered on the last time, cannot be used properly. Therefore, press the MENU button to exit from the maintenance menu, turn off the power and replace the old EEPROM (IC204) which attached on the board.

After replacing the EEPROM, perform Section 2-14. "Battery Preset and Battery End Voltage Adjustment".



2. Press the RESET (MENU SET) button.

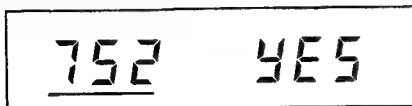
Check that the following message will be displayed on the display window (LCD).



Each time the ADVANCE button is pressed, "Set" and "ESC" will blink alternately.

This mode can be cancelled by pressing the RESET (MENU SET) button while "ESC" is displayed

- Press the RESET (MENU SET) button once.  
Check that the following message will be displayed on the display window (LCD).



If "no" is displayed on the display window (LCD), exit from Menu No. 752 once, and perform the above procedure again. If the display does not change, check if the adjacent circuitry of EEPROM (IC204) of the FP-118A board are abnormal, and replace the old EEPROM which attached on the board.

- Press the MENU button to exit from the maintenance menu. The display window (LCD) will return to the state before the maintenance menu was displayed.

### 2-17-5. Service of Zoom Lens

The zoom lens supplied with the DSR-390K1/390PK1/390K2/390PK2/370K1/370PK1/370K2/370PK2 is the part to be repaired by the lens manufacture.

In the failure of the lens, contact the lens manufactures.

Zoom lens	Lens manufacture
VCL-716BX (16 x)	Fuji Photo Optical Co., Ltd
VCL-719BX (19 x)	Canon Inc.

#### Note

Some repair parts like the lens hood and the dust cap can be supplied by sony part center.

For details, refer to service manual volume 2, section 1 "Spare Parts".

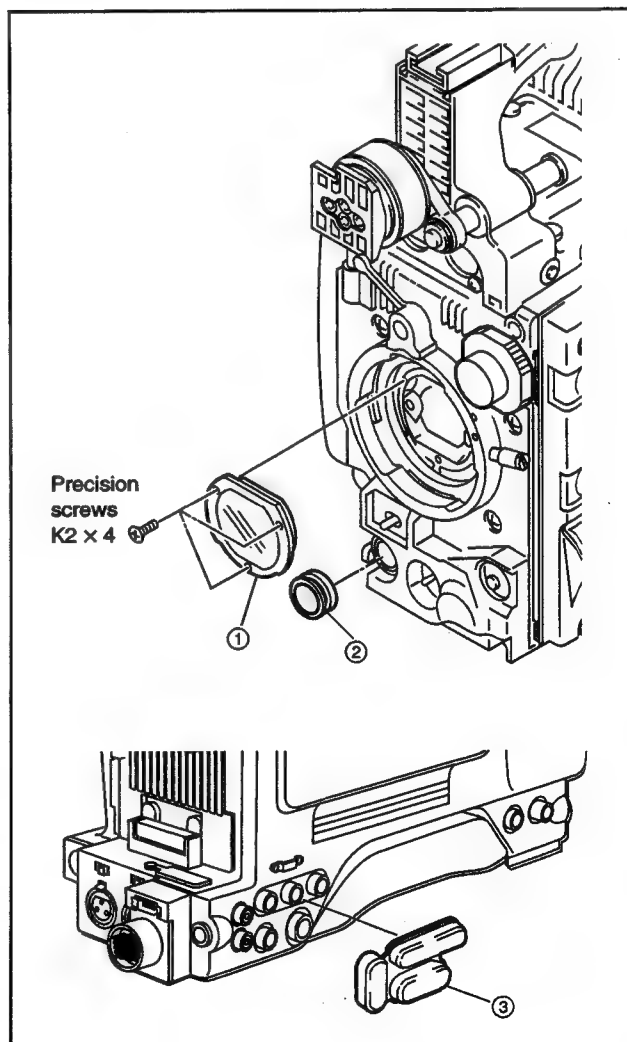
### 2-17-6. Recommended Replacement Part

Optical filter unit in the unit is a recommended replacement part. It may be turned cloudy with the lapse of time. If using a cloudy filter, the performance of camera will not be delivered. Replace it according to necessary. Parts made of rubber used in the unit are subject to cracks with the lapse of time. Visually check them sometimes and replace them according to necessary.

#### Note

It is recommended to replace the optical filter unit in a clean room.

Part name	Sony Part No.
①FILTER UNIT, OPTICAL	1-547-463-1X
②PACKING, VR	3-672-221-0X
③CAP, CN	3-613-311-0X



## 2-17-7. Contents of the EEPROM Data

The data that is stored in the EEPROM on the respective boards, is shown below.

### Note

Part numbers of the following ICs are shown in Vol. 2 “Section 1. Spare Parts” of the separate Service Manual are the ICs before saving the data contents.

Board	Ref.No. (address)	Contents of the saved data	Replacement of EEPROM
AT-150	IC504 (B-3/B side)	Basic menu setting data Advanced menu setting data Service menu setting data File menu setting data (For details, Refer to Section 4-3.)	Refer to Section 2-17-8.
DPR-141C	IC301(C-4/A side)	Service menu setting data (For details, Refer to Section 4-3.)	Refer to Section 2-17-8.
	IC501 (F-7/B side)	Serial No. System control adjustment data	Refer to Section 2-17-8.
	IC752 (F-7/B side)	Signal processor system adjustment data	Refer to Section 2-17-8.
ES-31/31P	IC103 (D-3/A side)	Service menu setting data (For details, Refer to Section 4-3.)	Refer to Section 2-17-8.
FP-118A	IC204 (D-1/B side)	System control adjustment data	Refer to Section 2-17-8.
HN-227	IC1 (A-2/A side)	Servo system adjustment data	Refer to Section 2-17-8.
RP-91	IC770 (B-2/B side)	RF system adjustment data	Refer to Section 2-17-8.
TG-187/187P	IC3 (A-1/A side)	Service menu setting data (For details, Refer to Section 4-3.)	Refer to Section 2-17-8.

## 2-17-8. Adjustment and Setting Items After Replacement of Board

When replacing the following boards, perform the adjustments or settings referring to the referring sections.

The boards not specified below do not require adjustments or settings.

---

### CCD Unit

#### Adjustment and Setting Items After CCD Unit is Replaced

- (1) Camera System Electrical Alignment. (Refer to Section 9-1-4.)
- (2) Back up the EEPROMs data on the TG-187/187P board. (Refer to Section 4-2-2. Service Menu Page 21 "Memory Backup".)

---

### AT-150 Board

The EEPROM (IC504) is mounted on the AT-150 board.

Perform the following adjustments or settings, when this IC is replaced, too.

#### Adjustment and Setting Items After EEPROM is Replaced

- Resetting the Basic menu, Advanced menu, Service menu and File menu.  
(Refer to Section 4-3. Reset Items and EEPROMs Data List.)

#### Setting Items After Board is Replaced

- Exchange the EEPROM (IC504).  
After the board is replaced, it is recommended to remount the EEPROM on the old AT-150 board onto the new board.  
If the EEPROM cannot be remounted, perform "Adjustment and Setting Items After EEPROM is Replaced".

---

### DPR-141C Board

The EEPROMs (IC301, IC501, IC752) are mounted on the DPR-141C board.

Perform the following adjustments or settings, when these ICs are replaced, too.

#### Adjustment and Setting Items After EEPROM is Replaced

##### IC301

- (1) Resetting the Service Menu.  
(Refer to Section 4-3. Reset Items and EEPROMs Data List.)
- (2) Back up the EEPROMs data on the DPR-141C board. (Refer to Section 4-2-2. Service Menu Page 21 "Memory Backup".)

##### IC501

- (1) Serial No. setting. (Refer to Section 4-1-2. System Menu No.522.)
- (2) Initializing the SY EEPROM. (Refer to Section 2-17-3. Initializing Procedure for EEPROM, and Section 4-1-3. Maintenance Menu No.750.)

##### IC752

- Initializing the SP EEPROM. (Refer to Section 2-17-3. Initializing Procedure for EEPROM, and Section 4-1-3. Maintenance Menu No.751.)

### **Setting Items After Board is Replaced**

(1) Exchange the IC301.

After the board is replaced, it is recommended to remount IC301 on the old DPR-141C board onto the new board.

If IC301 cannot be remounted, perform "Adjustment and Setting Items After EEPROM is Replaced" for IC301.

(2) Exchange the IC501.

After the board is replaced, it is recommended to remount IC501 on the old DPR-141C board onto the new board.

If IC501 cannot be remounted, perform "Adjustment and Setting Items After EEPROM is Replaced" for IC501.

(3) Exchange the IC752.

After the board is replaced, it is recommended to remount IC752 on the old DPR-141C board onto the new board.

If IC752 cannot be remounted, perform "Adjustment and Setting Items After EEPROM is Replaced" for IC752.

---

### **ES-31/31P Board**

The EEPROM (IC103) is mounted on the ES-31/31P board.

Perform the following adjustments or settings, when this IC is replaced, too.

### **Adjustment and Setting Items After EEPROM or Board is Replaced**

(1) Resetting the Service Menu. (Refer to Section 4-3. Reset Items and EEPROMs Data List.)

(2) Back up the EEPROMs data on the ES-31/31P board. (Refer to Section 4-2-2. Service Menu Page 21 "Memory Backup".)

---

### **FP-118A Board**

The EEPROM (IC204) is mounted on the FP-118A board.

Perform the following setting, when this IC is replaced, too.

### **Setting Item After EEPROM or Board is Replaced**

- Preset the KY EEPROM echo back data. (Refer to Section 2-17-4. KY EEPROM Echo Back Data Preset Procedure, and Section 4-1-3. Maintenance Menu No.752.)

---

## HN-227 Board

The EEPROM (IC1) is mounted on the HN-227 board.

Perform the following adjustments or settings, when this IC is replaced or initialized, too.

### Adjustment and Setting Items After EEPROM is Replaced

- (1) Initializing the IC1. (Refer to Section 4-1-3. Maintenance Menu No.753.)
- (2) Capstan FG Duty Adjustment. (Refer to Section 10-2-1.)
- (3) Reel FG Duty Adjustment. (Refer to Section 10-2-2.)
- (4) Reel Table FWD/REV Rewinding Torque Check/Adjustment. (Refer to Section 6-38.)
- (5) Switching Position Adjustments. (Refer to Section 7-6.)

### Adjustment and Setting Items After Board is Replaced

- Exchange the IC1.

After the board is replaced, it is recommended to remount IC1 on the old HN-227 board onto the new board.

If IC1 cannot be remounted, perform “Adjustment and Setting Items After EEPROM is Replaced”.

---

## RP-91 Board

The EEPROM (IC770) is mounted on the RP-91 board.

Perform the following adjustments or settings, when this IC is replaced or initialized, too.

### Adjustment and Setting Items After EEPROM is Replaced

- (1) Initializing the IC770. (Refer to Section 4-1-3. Maintenance Menu No.755.)
- (2) REC Current Adjustment. (Refer to Section 10-3-1. REC Current Adjustment, and Section 4-1-3. Maintenance Menu No.700.)
- (3) PLL Adjustment. (Refer to Section 10-3-2. PLL Adjustment, and Section 4-1-3. Maintenance Menu No.701.)
- (4) AGC and Delay Adjustment. (Refer to Section 10-3-3. AGC and Delay Adjustment, and Section 4-1-3. Maintenance Menu No.702.)
- (5) AUTO EQ Adjustment. (Refer to Section 10-3-4. AUTO EQ Adjustment, and Section 4-1-3. Maintenance Menu No.704.)

### Adjustment Item After Board is Replaced

- AUTO EQ Adjustment. (Refer to Section 10-3-4. AUTO EQ Adjustment, and Section 4-1-3. Maintenance Menu No.704.)

---

## TG-187/187P Board

The EEPROM (IC3) is mounted on the TG-187/187P board.

Perform the following adjustments or settings, when this IC is replaced, too.

### Adjustment and Setting Items After EEPROM is Replaced

- (1) TG-187/187P board adjustment is required. For details, contact your local Sony Sales Office/Service Center.
- (2) Reset the CCD block number. (Refer to Section 4-2-2. Service Menu Page 13 “CCD Block Number Information”.)
- (3) Back up the EEPROMs data on the TG-187/187P board. (Refer to Section 4-2-2. Service Menu Page 21 “Memory Backup”.)

## 2-18. i.Link Control Command

### AV / C Command List

The following list shows AV/C command (Only VCR Subunit Command) of which are supported with this unit.

AV/C command conform to 1394 TA Document AV/C Digital Interface Command Set General Specification/VCR Subunit Specification Version 2.0.1 Jan.5,1998.

AV/C command has the following three types.

- CONTROL Command : Control command
- STATUS Inquiry Command : Sense command
- SPECIFIC Inquiry Command : Inquiry command whether control command are supported or not.

Opcode	Value	Support		Comments
		C	S	
ABSOLUTE TRACK NUMBER	52h	○	○	Absolute Track Number search / sense command
BINARY GROUP	5Ah		○	Binary Group Data sense command
LOAD MEDIUM	C1h		○	Eject command
MEDIUM INFO	DAh		○	Tape Information sense command
OPEN MIC	60h	○	○	MIC open / close command
OUTPUT SIGNAL MODE	78h	○	○	Output Signal Mode control command
PLAY	C3h		○	Play / Search command
READ MIC	61h		○	MIC Data read command
RECORD	C2h		○	Record command
RECORDING SPEED	DBh	○	○	Recording Speed control command
RELATIVE TIME COUNTER	57h	○	○	COUNTER search / sense /preset command
SEARCH MODE	50h		○	Search Mode sense command
SMPTE / EBU TIME CODE	59h	○	○	Time Code search / sense command
TIME CODE	51h	○	○	Time Code search / sense command
TRANSPORT STATE	D0h		○	Tape transport sense command
WIND	C4h		○	STOP / FF / REW command

\* C and S of the Support shows the CONTROL Command and STATUS Command.

## Section 3

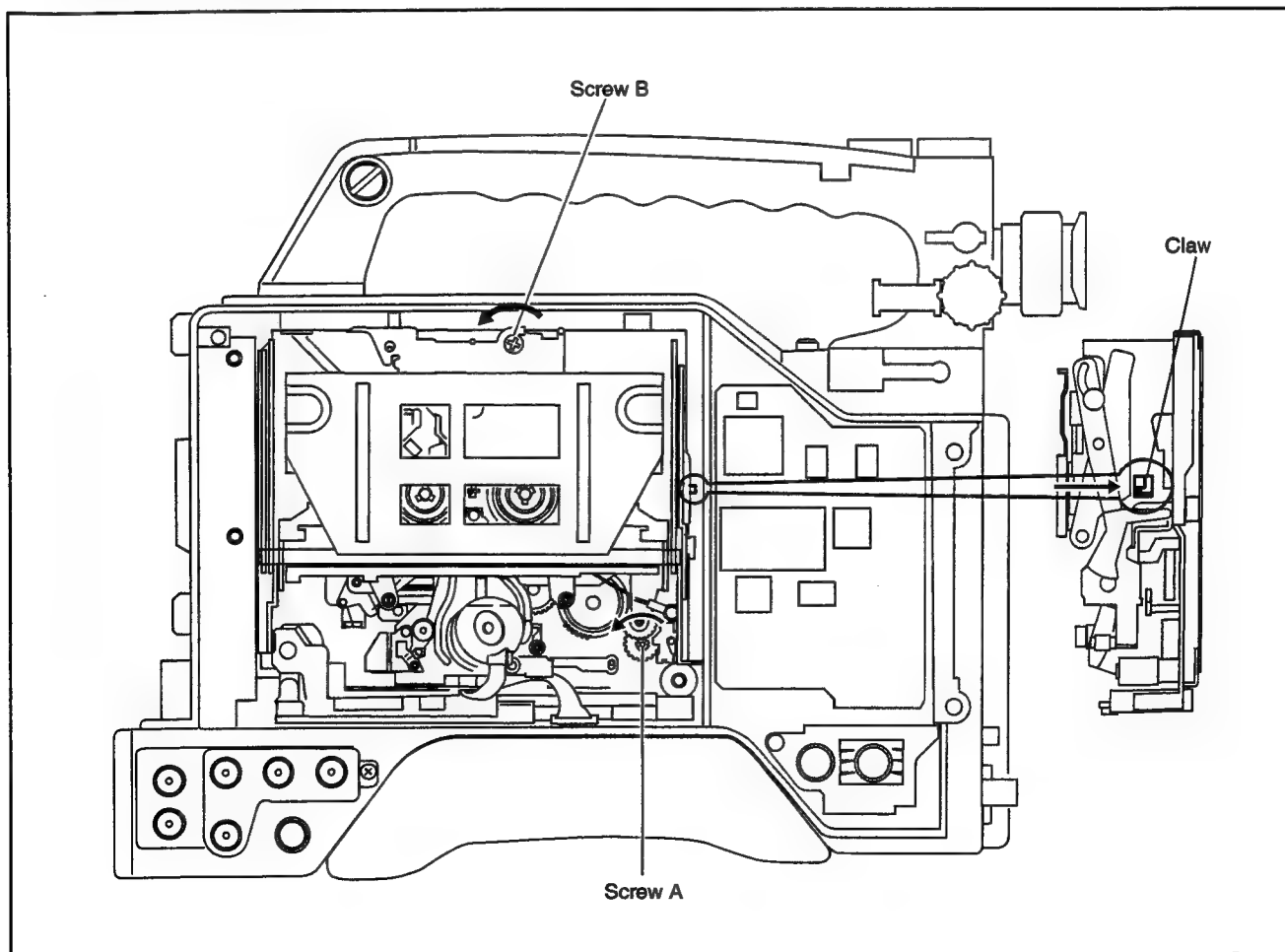
### Troubleshooting

#### 3-1. Extracting the Cassette Tape when Tape Slacks

1. Remove the left panel. (Refer to section 2-2-1.)
2. While holding the cassette compartment so that it does not rise, turn screw A (red) in the counterclockwise direction with a phillips screwdriver until the tape slacks slightly.
3. Turn screw B (red) in a counterclockwise direction with a phillips screwdriver, and wind the tape slacked in step 2.
4. Repeat steps 2 and 3 until the tape has been completely wound.
5. After winding the tape, remove your hand from the cassette compartment, and turn screw A further in a counterclockwise direction so that the cassette compartment rises, then extract the tape. If the cassette compartment does not rise, press the claws on the side of the cassette compartment with a thin screwdriver.

#### Point to notice when winding the tape:

1. Do not turn the screws A and B strongly.
2. Do not apply excessive tension to the tape.





### 3-2. Cleaning when Head Clogs

When the video head clogs, clean it as follows:

#### 3-2-1. Using a Cleaning Cassette

1. Load the DVL-12CL cleaning cassette into the unit, play for 5 seconds, and then eject promptly.

##### Notes

- Be sure to use the DVL-12CL cleaning cassette tape. Use of other types will cause abnormal wear of the video head or damage to the video head.
  - Do not use the rewind cleaning cassette tape.
2. Check that the head clog has been solved. If the head remains clogged even after using the cleaning cassette, clean the video head as follows:

#### 3-2-2. Using the Cleaning Cloth

1. Using a cleaning cloth moistened with cleaning liquid, gently touch the cloth on the video head.
2. Rotate the drum slowly in the rotating direction of the head (towards the left from the top) with your fingers, and clean the video head.

##### Notes

- Do not move the cleaning cloth over the video head in the vertical direction as this may damage the video head.
- Turn OFF the power when cleaning.

### 3-3. Releasing the HUMID TIMER when Condensation occurs

To protect the tape when dew condensation occurs, HUMID ALARM is displayed, and the VTR stops for a specified time set by the HUMID TIMER.

HUMID TIMER is a timer to stop operations for protecting the tape when condensation occurs. It is a function provided for the unit to clear condensation naturally.

When the condensation is cleared manually, the HUMID TIMER will not be turned off even when there is no condensation, and the unit will not operate.

To clear the condensation manually, and to operate the VTR, turn OFF the HUMID TIMER as follows:

1. Set the unit in SYSTEM MENU (Refer to section 4-1-2), and set the HUMID TIMER OFF mode (Menu No. 509).



\* X X X indicates the remaining time.

2. Press the RESET button twice, and if X X X becomes 0, it means that the HUMID TIMER has been turned off.

##### Note

If HUMID TIMER is not released by performing items 1 and 2, condensation is not completely cleared, therefore, clear condensation one more.

### 3-4. Error Codes

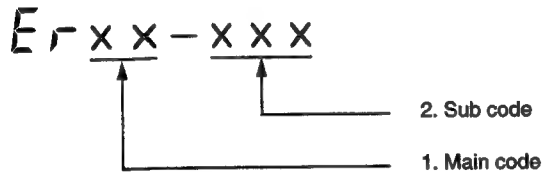
This unit is provided with a function to display error codes when error has been detected. When error has been detected during normal operation, error code is displayed on the LCD screen located in the side of the unit immediately.

- The sensor system's error display (main code 3X) goes off when the error is solved.
- The error display of the communication error between the microcomputer and peripheral devices goes off when the error is solved.
- The reel position motor error display (main code 21) goes off when the next operation is in normal.
- Other errors remain displayed until the power is turned off.

When an error has been detected, protection operation is carried out according to the mode.

Errors are displayed as an error codes. The contents of the displayed error codes are as follows:

#### Error Code Display



#### 1. Main Code

The causes of errors can be broadly classified as follows.

- |             |   |
|-------------|---|
| Er0x:       | Servo system, tape path system error  |
| Er21:       | Reel position motor, reel transfer mechanism periphery error                                |
| Er3x:       | Sensor system error   |
| Er91:       | Microcomputer and its periphery device error  |
| Er92, Er93: | Reference signal detection error  |
| Er95:       | Communication error between the microcomputer and video or audio signal processing devices. |

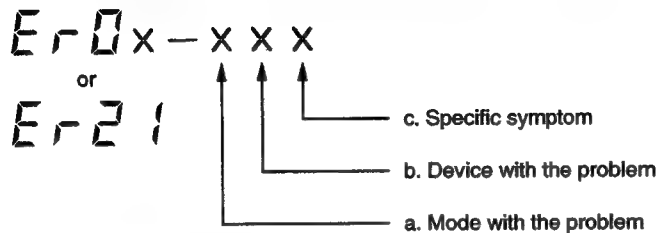
#### 2. Sub Code

For items which require more information than that shown by the main code, the causes of errors are provided in more detail using sub codes.

If information is sufficient with the main code, sub code 000 is displayed.

### 3-4-1. Servo System, Tape Path System, Reel Mechanism, and Sensor System Errors

#### Error Code Display



**a. Mode with the problem**

- 0: The mode cannot be identified, or there is no need to identify the mode
- 1: CASSETTE IN
- 2: THREADING
- 5: SEARCH, F.FWD/REW
- 6: PLAY/REC
- 8: UNTHREADING

**b. Device with the problem**

- 0: The device cannot be identified, or there is no need to identify the device
- 2: Function cam motor/cam position sensor
- 3: Drum motor/drum FG
- 4: Capstan motor/capstan FG
- 5: S side reel FG
- 7: T side reel FG
- 9: Both S/T side reel FGs or reel motor
- C: Reel position motor/reel position sensor

**c. Specific symptoms**

- 0: There is no need to identify the symptom
- 1: The operation did not complete within the designated time
- 2: Detected speed error
- 3: Detected tape slack
- 4: Could not detect FG
- 8: Detected abnormal current

## Error Codes (Er02-Er33)

Error code	Details	Error detection method	Operations when errors occur	Test mode for checking/Possible failures
Er02-098	Detected abnormal current of reel motor.	The mechanism control MICRO COM. could not detect S reel FG (SE-297 board/PH1) T reel FG (SE-297 board/PH2) output, or detected abnormal current of the reel motor.  *MICRO COM. means the microcomputer.	When errors occur, SHUT OFF operations are performed, and only the EJECT mode is accepted.	Test mode Capstan test mode 610 Reel test mode 611  Possible causes <ul style="list-style-type: none"> <li>• The tape is cut or jammed.</li> <li>• The reel torque cannot be adjusted</li> <li>• Faulty operations of the capstan motor or drive circuit (SV-213 board/IC300)</li> <li>• Faulty operations of the pinch roller block.</li> <li>• Faulty operations of the brake</li> <li>• Reel FG system circuit (SV-213 board/IC2, IC3, IC6) problems</li> <li>• Faulty operations of reel brake</li> <li>• Disconnection or faulty connection of flexible board (SE-297 board)</li> <li>• Problems or faulty disconnection of reel motor</li> <li>• Faulty operations of reel table, etc.</li> </ul>
Er02-503	Detected tape slack during SEARCH, F.FWD/REW.			
Er02-554	Could not detect the S reel FG output during SEARCH, F.FWD/REW.			
Er02-574	Could not detect the T reel FG output during SEARCH, F.FWD/REW.			
Er02-594	Could not detect the S/T reel FG output during SEARCH, F.FWD/REW.			
Er02-603	Detected tape slack during PLAY/REC.			
Er02-654	Could not detect S reel FG output during PLAY/REC.			
Er02-674	Could not detect T reel FG output during PLAY/REC.			
Er02-694	Could not detect S/T reel FG output during PLAY/REC.			
Er02-874	Could not detect the T reel FG output during unthreading.		When errors occur, SHUT OFF operations are performed. EJECT mode cannot be accepted.	
Er07-042	Detected capstan speed problem.	The mechanism control MICRO COM. could not detect CAPSTAN FG output or detected speed problem.	When errors occur, SHUT OFF operations are performed, and only the EJECT mode is accepted.	Test mode Capstan test mode 610 Possible causes <ul style="list-style-type: none"> <li>• Capstan free speed adjustment (capstan FG duty ratio adjustment) problems</li> <li>• Faulty operations of capstan motor or drive circuit (SV-213 board/IC300)</li> <li>• Capstan FG system circuit (SV-213 board/IC301, IC302) problems</li> <li>• Disconnection or faulty connection of flexible board connecting capstan motor</li> </ul>
Er08-032	Cannot recover from drum speed problem.	The mechanism control MICRO COM. could not detect drum motor FG output or detected speed problem.	When errors occur, SHUT OFF operations are performed, and only the EJECT mode is accepted.	Test mode Drum test mode 612 Possible causes <ul style="list-style-type: none"> <li>• Drum free speed adjustment (drum FG duty ratio adjustment) problems</li> <li>• Faulty operations of drum motor or drive circuit (SV-213 board/IC400)</li> <li>• Drum FG system circuit (SV-213 board/IC401, IC402) problems</li> <li>• Disconnection or faulty connection of flexible board connected to the drum</li> </ul>

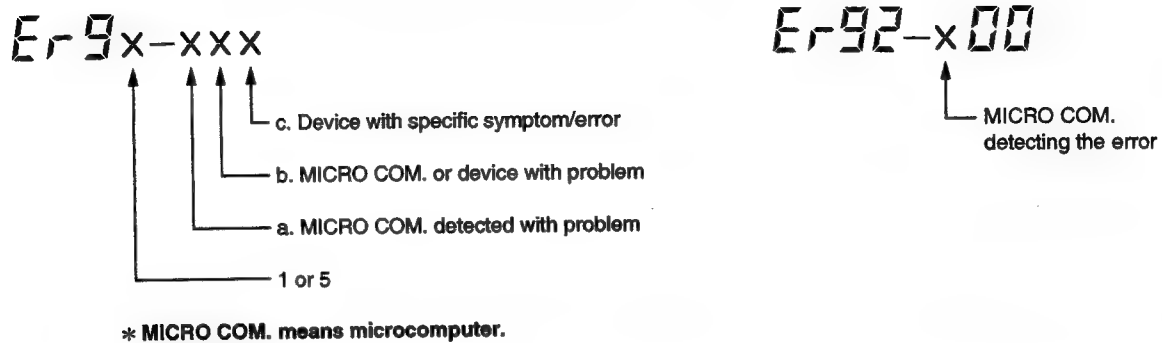
Error code	Details	Error detection method	Operations when errors occur	Test mode for checking/Possible failures
Er09-021	Pinch roller ON/OFF did not complete within the set time.	The mechanism control MICRO COM. could not obtain an appropriate input signal from the cam position sensor or detected abnormal current of the function cam (LD) motor.	SHUT OFF operations are performed, and only the EJECT mode is accepted.	Test mode Function cam test mode 613 Possible causes <ul style="list-style-type: none"> <li>Faulty operations of the reel brake</li> <li>Faulty operations of the function cam (LD) motor or drive circuit (SV-213 board/IC201)</li> <li>Incorrect gear position of the threading mechanism or function cam</li> <li>Cam mode sensor (SE-295 board/PH1 to PH4) or detection circuit (SV-213 board/Q803, Q804) problems</li> <li>Disconnection, faulty connection of the flexible board (SE-295 board)</li> <li>Disconnection of the harness</li> </ul>
Er09-028	Detected abnormal current of the function cam (LD) motor.			
Er09-221	Threading did not complete within the set time.			
Er09-821	Unthreading did not complete within the set time.			
Er21-IC1	Reel position movement did not complete within the set time.	The mechanism control MICRO COM. could not obtain an appropriate input signal from the reel position sensor or detected abnormal current of the reel position motor.	The error is displayed until the cassette is inserted at the next time.	Possible causes <ul style="list-style-type: none"> <li>Faulty operations of the reel position (shift) motor</li> <li>Faulty operations of the reel table movement mechanism</li> <li>Faulty detection of the reel position sensor (SE-297 board/PH3, PH4) or faulty detection circuit (SV-213 board/Q805)</li> <li>Disconnection or faulty connection of the flexible board (SE-297, MT-114)</li> </ul>
Er31-000	Tape top could not be released.	The detection signal (detected tape top or tape end after SHORT FF or SHORT REW) was input to the mechanism control MICRO COM. from the tape top sensor or tape end sensor.	When errors occur, the STOP mode is set. Only the PLAY, FF, and EJECT modes are accepted. The error is displayed until it is corrected.	Possible causes <ul style="list-style-type: none"> <li>Faulty tape top sensor (CC-68 board/Q1)/tape end sensor (SE-295 board/Q1) or detection circuit (SV-213 board/IC3)</li> <li>Disconnection or faulty connection of the flexible board (SE-295, MT-114, CC-68)</li> </ul>
Er32-000	Tape end could not be released.		When errors occur, the STOP mode is set. Only the REW and EJECT modes are accepted. The error is displayed until it is corrected.	
Er33-000	Reel position sensor detected STANDARD and MINI at the same time.	Both the detections signals from the L reel position sensor and S reel position sensor were input to the mechanism control MICRO COM.	The error is displayed until it is corrected.	Possible causes <ul style="list-style-type: none"> <li>Faulty L reel position sensor (SE-297 board/PH3)/S reel position sensor (SE-297 board/PH4)</li> <li>Disconnection or faulty connection of the flexible board</li> <li>Faulty detection circuit (SV-213 board/Q805)</li> </ul>

#### Notes

- For errors of the servo system and tape path system, basic operations can be checked in the test mode.
- The "Possible failures" above are only for the main problem area.
- Regarding the test mode, refer to section "4-1. Menu (LCD)."

### 3-4-2. Communication Error of Microcomputer and Peripheral Devices

#### Error Code Display



#### Note

For Er91 and Er95, the device (EEPROM, IC) or the digital video signal bus from camera with the problem shows the error using sub codes b and c.

- a. MICRO COM. detected with problem
  - 1: System control (SY) MICRO COM. <FP-118A board/IC3>
  - 2: LCD and time code control (KY) MICRO COM. <FP-118A board/IC200>
  - 4: Mechanism control (SV) MICRO COM. <SV-213 board/IC500>
  - 7: Signal processor control (SP) MICRO COM. <DPR-141C board/IC751>
  - F: Index picture control (IP) MICRO COM. <IPM-94 board/IC103>
- b. MICRO COM. or device with problem
  - 1: System control (SY) MICRO COM.
  - 2: LCD and time code control (KY) MICRO COM.
  - 3: EEPROM
  - 4: Mechanism control (SV) MICRO COM.
  - 7: Signal processor control (SP) MICRO COM.
  - 8: Time code IC
  - F: Index picture control (IP) MICRO COM.
- c. Specific Symptom
  - 3: Parity error
  - 5: Communication not possible

## Error Codes (Er9 1-Er95)

Error codes	Contents
Er9 1- 123	Communication (parity) error of data from the LCD/time code control (KY) MICRO COM. to the system control (SY) MICRO COM.
Er9 1- 125	Communication is impossible from the LCD/time code control (KY) MICRO COM. to the system control (SY) MICRO COM. Clock (SCLK) is not input from the LCD/time code control (KY) MICRO COM. A communication is not completed within a specified time.
Er9 1- 131	Error of the EEPROM controlled from the system control MICRO COM. (SY). Impossible to read/write with the EEPROM (DPR-141C board/IC501).
Er9 1- 13F	Read/write error from the system control (SY) MICRO COM. to the cassette memory. Error was detected when reading/writing from the cassette memory terminal (SE-298 board/MIC connector) to the cassette memory.
Er9 1- 143	Communication (parity) error of data from the mechanism control (SV) MICRO COM. to the system control (SY) MICRO COM.
Er9 1- 173	Communication (parity) error of data from the signal processor control (SP) MICRO COM. to the system control (SY) MICRO COM.
Er9 1-1F3	Communication (parity) error of data from the index picture (IP) MICRO COM. to the system control (SY) MICRO COM.
Er9 1-1F5	Communication is impossible between the system control (SY) MICRO COM. and the index picture (IP) MICRO COM. Clock (SCLK) is not input from the index picture (IP) MICRO COM. A communication is not completed within a specified time.
Er9 1-2 13	Communication (parity) error of data from the system control (SY) MICRO COM. to the LCD/time code control (KY) MICRO COM.
Er9 1-2 15	Communication is impossible from the system control (SY) MICRO COM. to the LCD/time code control (KY) MICRO COM. A communication is not completed within a specified time.
Er9 1-232	Error of the EEPROM controlled from the LCD/time code control (KY) MICRO COM. (SY). Read/write with the EEPROM (FP-118A board/IC204) is impossible.
Er9 1-285	Communication error from the time code IC (FP-118A board/IC201) to the LCD/time code control (KY) MICRO COM.
Er9 1-4 13	Communication (parity) error of data from the system control (SY) MICRO COM. to the mechanism control (SV) MICRO COM.
Er9 1-4 15	Communication is impossible between the mechanism control (SV) MICRO COM. and the system control (SY) MICRO COM. Clock (SCLK) is not input from the system control (SY) MICRO COM. A communication is not completed within a specified time.
Er9 1-433	Error of the EEPROM controlled from the mechanism control (SV) MICRO COM. Impossible to read/write with the EEPROM (HN-227 board/IC1).
Er9 1-434	Error of the EEPROM controlled from the mechanism control (SV) MICRO COM. Impossible to read/write with the EEPROM (RP-91 board/IC770).
Er9 1-473	Communication (parity) error of data from the signal processor control (SP) MICRO COM. to the mechanism control (SV) MICRO COM.
Er9 1-475	Communication is impossible between the mechanism control (SV) MICRO COM. and the signal processor control (SP) MICRO COM. Clock (SCLK) is not input from the signal processor control (SP) MICRO COM. A communication is not completed within a specified time.
Er9 1-743	Communication (parity) error of data from the mechanism control (SV) MICRO COM. to the signal processor control (SP) MICRO COM.
Er9 1-F 13	Communication (parity) error of data from the system control (SY) MICRO COM. to the index picture (IP) MICRO COM.
Er9 1- 1d5	Communication is impossible between the SY MICRO COM. and the DV MICRO COM. A communication is not completed within a specified time.

Error codes	Contents
Er91-1d3	Parity error occurred in communication between the SY MICRO COM. and the DV MICRO COM.
Er92-100	The system control (SY) MICRO COM. cannot detect 1/2 VD signal (SV-213 board/IC500) or SVTRKD signal (SV-213 board/IC500) from the mechanism control (SV) MICRO COM.
Er92-200	The display/function control (KY) MICRO COM. cannot detect 1/2 VD signal.
Er92-F00	The index picture (IP) MICRO COM. cannot detect 1/2 VD signal or SVTRKD signal.
Er93-000	The mechanism control (SV) MICRO COM. cannot detect FLTD signal (DPR-141C board/IC711) from the DPR-141C board.
Er95-100	Communication (parity) error of data from the AUX IC (DPR-141C board/IC772) to the system control (SY) MICRO COM.
Er95-101	Communication (parity) error of data from the FSCONT IC (DPR-141C board/IC825) to the system control (SY) MICRO COM.
Er95-102	Communication (parity) error of data from the NFIL IC (DPR-141C board/IC505) to the system control (SY) MICRO COM.
Er95-103	SY MICRO COM. failed in communication to the YC Sep. IC (IV-54 board/IC112).
Er95-120	CF pulse is not input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-123	Error of digital data (2) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-124	Error of digital data (3) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-125	Error of digital data (4) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-126	Error of digital data (5) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-127	Error of digital data (6) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-128	Error of digital data (7) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-129	Error of digital data (8) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-12R	Error of digital data (9) input from the RC IC (DPR-141C board/IC310) to the NFL IC (DPR-141C board/IC505).
Er95-403	Communication (parity) error of data from the SFY IC (DPR-141C board/IC771) to the mechanism control (SV) MICRO COM.
Er95-405	Communication (parity) error of data from the CHCD IC (RP-91 board/IC774) to the mechanism control (SV) MICRO COM.
Er95-703	Communication (parity) error of data from the SFY IC (DPR-141C board/IC771) to the signal processor control (SP) MICRO COM.
Er95-704	Communication (parity) error of data from the AUDIO CORE (DPR-141C board/IC811) to the signal processor control (SP) MICRO COM.
Er95-F10	Communication (parity) error of data from the IP IC (IPM-94 board/IC101) to the index picture (IP) MICRO COM.
Er95-F11	Write processing error from the IP IC (IPM-94 board/IC101) to the memory (IPM-94 board/IC102).
Er95-F12	Write processing error from the frame memory (IPM-94 board/IC201 to IC214, IC301 to IC314) to a tape controlled by IP IC (IPM-94 board/IC101).

### Operations when Error Occurs

When a communication error and communication not possible (Error91 to Error95) occur, only an error display appears and the unit does not stop its operation.

### Possible Failures

- Microprocessor or device
- Destination IC of the microprocessor
- Connection between board to board or connector

#### Note

Digital data (0) to digital data (12) shown Er95-120 through Er95-12A indicate numbers of the digital video data bus. Error occurs when data is not input to the NFIL IC or is not read correctly.



### 3-5. Self Diagnosis

The self diagnosis can be performed with service mode operation.  
Refer to section 4-2-1 for the operating procedure of the service mode.

#### • Page 22 Self Diagnosis 2

PAGE 22 (NEXT→▼ PREV→▲)	
ERROR DISP 1/3	
→ DISP SELECT :	1
PP-PMPD :	000H
PR-PMPD1 :	000H
PR-PMPD2 :	000H
PR-G2 :	000H
PR-R2 :	000H
EXIT MENU (YES→PUSH)	

#### DISP SELECT

This item is used for switching the contents of error item detail display.

1. The latest error check result is displayed.
2. The item which diagnosed as an error in the past by means of automatic self-diagnosis function is displayed.

#### PP-PMPD

This item shows a detail of the sync signal input check result and internal RAM check result of PP LSI (IC210 on the DPR board).  
800H: PP LSI's internal RAM error  
002H: HD signal input to PP LSI (pin 102 of IC210/DPR board) error  
001H: VD signal input to PP LSI (pin 101 of IC210/DPR board) error

#### Note

If there is a plural error, the sum of each error code is displayed as three digits hexadecimal notation.  
(If there are errors in both HD and VD signals, 003H is displayed on the PP-PMPD.)

#### PR-PMPD1

This item shows a detail of the sync signal input check result of PR LSI (IC216 on the DPR board).  
002H: HD signal input to PR LSI (pin 74 of IC216/DPR board) error  
001H: VD signal input to PR LSI (pin 73 of IC216/DPR board) error

#### PR-PMPD2

This item shows a detail of the internal RAM check result of PR LSI (IC216/DPR board).  
800H: PR LSI's internal RAM error

#### PR-G2

Not in use

#### PR-R2

Not in use

• Page 23 Self Diagnosis 3

PAGE 23 (NEXT→▼ PREV→▲)	
ERROR DISP 2/3	
→ DISP SELECT :	1
PR-G1 :	000H
PR-R1 :	000H
PR-G0 :	000H
PR-R0 :	000H
PR-B1 :	000H
EXIT MENU (YES→PUSH)	

PR-G1  
Not in use

PR-R1  
Not in use

PR-G0  
Not in use

PR-R0  
Not in use

PR-B1  
Not in use

• Page 24 Self Diagnosis 4

PAGE 24 (NEXT→▼ PREV→▲)	
ERROR DISP 3/3	
→ DISP SELECT :	1
RC- PMPD :	000H
RC- CY :	000H
RC- CCR :	000H
RC- CCB :	000H
DSP COM. :	000H
MEMORY :	000H
EXIT MENU (YES→PUSH)	

RC-PMPD  
This item shows a detail of sync signal input check result and internal RAM check result of RC LSI (IC310 on the DPR board).  
800H: RC LSI's internal RAM error  
004H: HD signal input to RC LSI (pin 65 of IC310/DPR board) error  
002H: VD signal input to RC LSI (pin 64 of IC310/DPR board) error  
001H: GF signal input to RC LSI (pin 63 of IC310/DPR board) error

RC-CY  
This item shows a detail of Y signal's wiring check result between PR LSI (IC216/DPR board) and RC LSI (IC310/DPR board).  
400H: 10th of Y signal (wiring between pin 94 of IC216 and pin 97 of IC310 on the DPR board) error  
200H: 9th of Y signal (wiring between pin 93 of IC216 and pin 98 of IC310 on the DPR board) error  
100H: 8th of Y signal (wiring between pin 92 of IC216 and pin 99 of IC310 on the DPR board) error  
080H: 7th of Y signal (wiring between pin 91 of IC216 and pin 100 of IC310 on the DPR board) error  
040H: 6th of Y signal (wiring between pin 90 of IC216 and pin 101 of IC310 on the DPR board) error  
020H: 5th of Y signal (wiring between pin 89 of IC216 and pin 103 of IC310 on the DPR board) error  
010H: 4th of Y signal (wiring between pin 88 of IC216 and pin 104 of IC310 on the DPR board) error  
008H: 3rd of Y signal (wiring between pin 86 of IC216 and pin 105 of IC310 on the DPR board) error  
004H: 2nd of Y signal (wiring between pin 85 of IC216 and pin 106 of IC310 on the DPR board) error  
002H: 1st of Y signal (wiring between pin 84 of IC216 and pin 107 of IC310 on the DPR board) error  
001H: 0th of Y signal (wiring between pin 83 of IC216 and pin 108 of IC310 on the DPR board) error

#### RC-CCR

This item shows a detail of CR signal's wiring check result between PR LSI (IC216/DPR board) and RC LSI (IC310/DPR board).

- 400H: 10th of CR signal (wiring between pin 108 of IC216 and pin 84 of IC310 on the DPR board) error
- 200H: 9th of CR signal (wiring between pin 107 of IC216 and pin 85 of IC310 on the DPR board) error
- 100H: 8th of CR signal (wiring between pin 106 of IC216 and pin 86 of IC310 on the DPR board) error
- 080H: 7th of CR signal (wiring between pin 104 of IC216 and pin 87 of IC310 on the DPR board) error
- 040H: 6th of CR signal (wiring between pin 103 of IC216 and pin 88 of IC310 on the DPR board) error
- 020H: 5th of CR signal (wiring between pin 102 of IC216 and pin 89 of IC310 on the DPR board) error
- 010H: 4th of CR signal (wiring between pin 101 of IC216 and pin 92 of IC310 on the DPR board) error
- 008H: 3rd of CR signal (wiring between pin 100 of IC216 and pin 93 of IC310 on the DPR board) error
- 004H: 2nd of CR signal (wiring between pin 99 of IC216 and pin 94 of IC310 on the DPR board) error
- 002H: 1st of CR signal (wiring between pin 98 of IC216 and pin 95 of IC310 on the DPR board) error
- 001H: 0th of CR signal (wiring between pin 95 of IC216 and pin 96 of IC310 on the DPR board) error

#### RC-CCB

This item shows a detail of CB signal's wiring check result between PR LSI (IC216/DPR board) and RC LSI (IC310/DPR board).

- 400H: 10th of CB signal (wiring between pin 121 of IC216 and pin 70 of IC310 on the DPR board) error
- 200H: 9th of CB signal (wiring between pin 120 of IC216 and pin 71 of IC310 on the DPR board) error
- 100H: 8th of CB signal (wiring between pin 119 of IC216 and pin 72 of IC310 on the DPR board) error
- 080H: 7th of CB signal (wiring between pin 118 of IC216 and pin 75 of IC310 on the DPR board) error
- 040H: 6th of CB signal (wiring between pin 117 of IC216 and pin 76 of IC310 on the DPR board) error
- 020H: 5th of CB signal (wiring between pin 116 of IC216 and pin 77 of IC310 on the DPR board) error
- 010H: 4th of CB signal (wiring between pin 115 of IC216 and pin 78 of IC310 on the DPR board) error
- 008H: 3rd of CB signal (wiring between pin 112 of IC216 and pin 79 of IC310 on the DPR board) error
- 004H: 2nd of CB signal (wiring between pin 111 of IC216 and pin 80 of IC310 on the DPR board) error
- 002H: 1st of CB signal (wiring between pin 110 of IC216 and pin 82 of IC310 on the DPR board) error
- 001H: 0th of CB signal (wiring between pin 109 of IC216 and pin 83 of IC310 on the DPR board) error

#### Note

If the sync signals input to PR LSI and RC LSI is having error, error is also detected on the wiring check between PR LSI and RC LSI.

## DSP COM.

This item shows a detail of the communication check result between each LSI and microcomputer.

004H: communication error between RC LSI and microcomputer

002H: communication error between PR LSI and microcomputer

001H: communication error between PP LSI and microcomputer

### Note

The RC LSI performs the data communication to a microcomputer with the following six signals:

Pin 26: CS      Pin 23: SDA1

Pin 25: SCK      Pin 22: SDA2

Pin 24: SDA0      Pin 21: SDA3

The PR LSI performs the data communication to a microcomputer with the following six signals:

Pin 58: CS      Pin 55: SDA1

Pin 57: SCK      Pin 54: SDA2

Pin 56: SDA0      Pin 53: SDA3

The PP LSI performs the data communication to a microcomputer with the following six signals:

Pin 41: CS      Pin 38: SDA1

Pin 40: SCK      Pin 37: SDA2

Pin 39: SDA0      Pin 36: SDA3

If an error is detected during the data communication with LSI, other error item may be detected at the same time.

## MEMORY

This item shows a detail of the communication check result between each EEPROM and microcomputer.

080H: communication error between EEPROM (IC103) on the ES board and microcomputer

040H: communication error between EEPROM (IC301) on the DPR board and microcomputer

020H: communication error between EEPROM (IC3) on the TG board and microcomputer

010H: communication error between EEPROM (IC504) on the AT board and microcomputer

### Note

When the back up data is used because of an error in EEPROM on the TG, DPR, and ES boards, and when the micro computer's standard value is used because of an error in EEPROM on the AT board, indication of each EEPROM on the service menu will show a blank.

### 3-6. Auto Check Function

The error contents, measures and the possible abnormalities are as follows when the following codes are displayed as the result of Auto Check.

(Refer to the Operating Instructions available separately for the operating procedure of the Auto Check Function.)

#### Displays, Error Contents, Measures or Possible Abnormalities

Displays	Error contents, measures or possible abnormalities
At good	The system can be used as it is when the recording status of video and audio is normal.
At ng-01	This is an error during normal operation. Exit from the menu by pressing the MENU button. (To return to the status before displaying the VTR menu.) The error code remains displayed. Analyze the cause of the error by referring to Section "3-4. Error Codes" for the contents of the error.
At ng-02	When the RESET (MENU SET) button is kept pressed for about two seconds while "At ng-02" is displayed, the two digit error code appears. Analyze the cause of the error by referring to error code of the auto check code.
At ng-03	Exit from the menu by pressing the MENU button. (To return to the status before displaying the VTR menu.) When any of the error codes from Er95-120 to Er95-12A is displayed, analyze the cause of the error by referring to Section "3-4. Error Codes" for the contents of the error. If any error codes are not displayed, this is the condition that the sync signal is not fed to IC3 of the FP-118A board from a camera. If result of the Auto Check remains unchanged even though the Auto Check is performed again after confirming connection between VTR and camera, the following causes are possible. Causes (possible abnormalities) <ul style="list-style-type: none"><li>• Circuit is shorted.</li><li>• Circuit is open.</li></ul>
At ng-04	It is detected that "A cassette is in the REC INHIBIT (SAVE) status." If result of the Auto Check remains unchanged even though the Auto Check is performed again after confirming that the REC/SAVE switch of a cassette is not set in the SAVE position (if the switch is set in SAVE, set it to the REC position, or use another cassette (switch of which is set in REC.)) Causes (possible abnormalities) <ul style="list-style-type: none"><li>• The REC INHIBIT detection switch of a VTR is defective.</li><li>• The circuit from the REC INHIBIT detection switch to IC502 pin-14 of the SV-213 board is defective. (Circuit is shorted or open, or poor contact of connector.)</li></ul>
At ng-05	It is detected that "Cassette is not present even though a cassette is inserted." If result of the Auto Check remains unchanged even though the Auto Check is performed again after inserting another cassette, the following causes are possible. Causes (possible abnormalities) <ul style="list-style-type: none"><li>• A cassette compartment is defective.</li><li>• Tape top end sensor, or LED (including prism) or its peripheral circuit is defective. (Circuit is shorted or open, or poor contact of connector.)</li></ul>
o-HAUL	It is detected that "Error rate is deteriorated (The readout error during playback of the recorded video/audio data has increased.)" The system can be used as it is when the recording status of video and audio is normal, however, the following causes are possible. Causes (possible abnormalities) <ul style="list-style-type: none"><li>• Head is dirty.</li><li>• Tape path is poor.</li><li>• The RP-91 board is defective.</li><li>• Poor contact of the flexible card wires which are connected to the RP-91 board.</li></ul>

## Auto Check Error Code

If “At ng-02” is displayed as the result of Auto Check and when the RESET (MENU SET) button is kept pressed for about two seconds while “At ng-02” is displayed, the two digit error code appears.

### Displays, Error Contents, Measures or Possible Abnormalities

Code	Error contents, measures or possible abnormalities
00	It is in the status that the data other than the video and audio data which is recorded on a tape, cannot be read out. The signal circuit from the head of drum to IC of the DPR-141C board is abnormal. Causes (possible abnormalities) <ul style="list-style-type: none"><li>• Poor contact of connectors</li><li>• Head clogging</li><li>• The RP-91 board is defective.</li><li>• The MB-833 board is defective.</li><li>• The DPR-141C board is defective.</li></ul>
other than 00	The error contents, measures and possible abnormalities are different depending upon the respective processes. (Refer to the following.)

#### 1. Cassette Out

When the Auto Check is performed, the cassette compartment is automatically opened (when a cassette is present, it is ejected), and the Auto Check is performed during the period from the time when user inserts a cassette until the cassette compartment is closed. When any abnormalities are detected, the error code is displayed.

### Displays, Error Contents, Measures or Possible Abnormalities

Code	Error contents, measures or possible abnormalities
12	The cassette compartment is locked.
13	The cassette compartment is not attached.
18	Tape top sensor does not respond.
19	Tape end sensor does not respond.
1a	Both tape top and tape end sensors do not respond.
1a	LEDs of the tape top end sensor are abnormal. ON/OFF voltage is abnormal.
20	The function cam does not enter the STBY mode.
21	LED of the mechanical function cam mode sensor is abnormal.
22	LED of the mechanical function cam mode sensor is abnormal.
23	LED of the mechanical function cam mode sensor is abnormal.
24	LED of the mechanical function cam mode sensor is abnormal.
28	The detection voltage/current of the function cam motor does not return to 0.
38	The detection voltage/current of the drum motor does not return to 0.
48	The detection voltage/current of the capstan motor does not return to 0.
50	LED of the supply reel FG sensor is abnormal.
70	LED of the take-up reel FG sensor is abnormal.
c1	LED of the reel position (standard cassette position) sensor is abnormal.
c2	LED of the reel position (mini cassette position) sensor is abnormal.
c8	The detection voltage/current of the reel shift motor does not return to 0.

## 2. Cassette In

Insert a cassette into the cassette compartment and close the lid of the cassette compartment.

Check is performed during tape loading. When any abnormalities are detected, the error code is displayed.

### Displays, Error Contents, Measures or Possible Abnormalities

Code	Error contents, measures or possible abnormalities
12	The cassette compartment lock is released.
1a	"Tape is present" is not detected.
1a	LEDs of the tape top end sensor are abnormal.
20	Positions of the function cam are not detected in the correct order.
21	LED of the mechanical function cam mode sensor is abnormal.
22	LED of the mechanical function cam mode sensor is abnormal.
23	LED of the mechanical function cam mode sensor is abnormal.
24	LED of the mechanical function cam mode sensor is abnormal.
50	LED of the supply reel FG sensor is abnormal.
70	LED of the take-up reel FG sensor is abnormal.
c1	LED of the reel position (standard cassette position) sensor is abnormal.
c2	LED of the reel position (mini cassette position) sensor is abnormal.
d0	The free running frequency of PLL on the RP-91 board is abnormal.

## 3. Record

Press the VTR button of the camera or the lens.

Check is performed during the test recording of about one minute. When any abnormalities are detected, the error code is displayed.

### Displays, Error Contents, Measures or Possible Abnormalities

Code	Error contents, measures or possible abnormalities
12	The cassette compartment lock is released.
18	Tape top is detected.
1a	LEDs of the tape top end sensor are abnormal.
21	LED of the mechanical function cam mode sensor is abnormal.
22	LED of the mechanical function cam mode sensor is abnormal.
23	LED of the mechanical function cam mode sensor is abnormal.
24	LED of the mechanical function cam mode sensor is abnormal.
28	The operating voltage/current of the function cam motor is abnormal.
38	The operating voltage/current of the drum motor is abnormal.
40	The duty ratio of the capstan FG (A) and FG (B) are abnormal.
48	The operating voltage/current of the capstan motor is abnormal.
50	LED of the supply reel FG sensor is abnormal.
70	LED of the take-up reel FG sensor is abnormal.
98	Operating voltage/current of the reel motor is abnormal.
c1	LED of the reel position (standard cassette position) sensor is abnormal.
c2	LED of the reel position (mini cassette position) sensor is abnormal.
c8	The operating voltage/current of the reel shift motor is abnormal.

#### 4. Cue up to Record Start Point

After tape is recorded for about one minute, tape is rewound up to the record start point.

Check is performed during the period from the time when recording is terminated automatically until the tape is rewound up to the record start point. When any abnormalities are detected, the error code is displayed.

#### Displays, Error Contents, Measures or Possible Abnormalities

Code	Error contents, measures or possible abnormalities
12	The cassette compartment lock is released.
19	Tape end is detected.
1a	LEDs of the tape top end sensor are abnormal.
21	LED of the mechanical function cam mode sensor is abnormal.
22	LED of the mechanical function cam mode sensor is abnormal.
23	LED of the mechanical function cam mode sensor is abnormal.
24	LED of the mechanical function cam mode sensor is abnormal.
28	The operating voltage/current of the function cam motor is abnormal.
38	The operating voltage/current of the drum motor is abnormal.
48	The operating voltage/current of the capstan motor is abnormal.
50	LED of the supply reel FG sensor is abnormal.
70	LED of the take-up reel FG sensor is abnormal.
98	Operating voltage/current of the reel motor is abnormal.
c1	LED of the reel position (standard cassette position) sensor is abnormal.
c2	LED of the reel position (mini cassette position) sensor is abnormal.
c8	The operating voltage/current of the reel shift motor is abnormal.



## 5. Playback

The recorded segment is played back.

Check is performed during playback. When any abnormalities are detected, the error code is displayed.

### Displays, error contents, measures or possible abnormalities

Code	Error contents, measures or possible abnormalities
12	The cassette compartment lock is released.
18	Tape top is detected.
1a	LEDs of the tape top end sensor are abnormal.
21	LED of the mechanical function cam mode sensor is abnormal.
22	LED of the mechanical function cam mode sensor is abnormal.
23	LED of the mechanical function cam mode sensor is abnormal.
24	LED of the mechanical function cam mode sensor is abnormal.
28	The operating voltage/current of the function cam motor is abnormal.
30	The SSA (switching position) is incorrect.
38	The operating voltage/current of the drum motor is abnormal.
48	The operating voltage/current of the capstan motor is abnormal.
50	LED of the supply reel FG sensor is abnormal.
70	LED of the take-up reel FG sensor is abnormal.
98	Operating voltage/current of the reel motor is abnormal.
c1	LED of the reel position (standard cassette position) sensor is abnormal.
c2	LED of the reel position (mini cassette position) sensor is abnormal.
c8	The operating voltage/current of the reel shift motor is abnormal.
e0	The system data that is read from IC774 on the RP-91 board, and the system data that is read from IC771 on the DPR-141C board are abnormal. (The system data: The recorded data that can be read when the servo is locked.)
e1	The system data (the system data is the recorded data that can be read when the servo is locked) is abnormal. (The respective data of ABS Track No., time code pack and bin pack must be free from errors.)

## Section 4 Menu Setting

### 4-1. Menu (LCD)

The display window (LCD) of this unit enables setting of the system functions of this unit, and VTR menus required for adjustments and maintenance.

The VTR menus are divided into the following three:

- **USER MENU**  
For user operations.
- **SYSTEM MENU**  
Used to set various system functions of this unit (This menu is not described in the instruction manual and therefore cannot be used by users.)
- **MAINTENANCE MENU**  
Used for performing maintenance including adjustments.

#### 4-1-1. User Menu

##### Operating the USER MENU

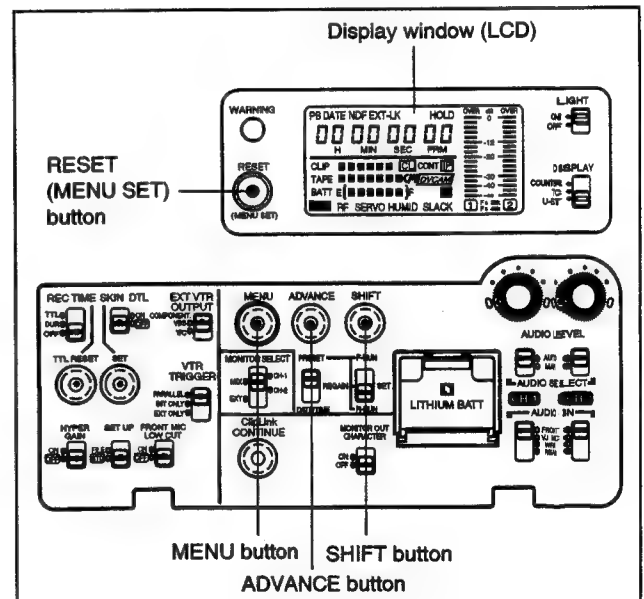
1. Press the MENU button in the TC panel.  
(The time data on the display window changes to the menu display.)  
The display window (LCD) displays "101 xxxx" and the USER MENU is set. (Fig. A.)
2. Press the ADVANCE button repeatedly until the Menu No. on the display window (LCD) becomes the desired Menu No.  
Pressing the ADVANCE button (+ button) will switch and display the menu in the following order.  
(DSR-390/370) 101 → 201 → 204 ... 221 → 101 ...  
(DSR-390P/370P) 101 → 201 → 206 ... 214 → 101 ...
3. To display the desired Menu No., press the SHIFT button. The current value setting will blink, the value will be enabled to be changed. (Fig. B.)
4. To advance to the next digit, press the SHIFT button. To change the set value, press the ADVANCE button and display the desired value.
5. Press the RESET (MENU SET) button.  
The set value is registered, and the Menu No. blinks again. (Fig. C.)
6. Press the MENU button.  
The display window (LCD) returns to the state before the menu display.

##### Note

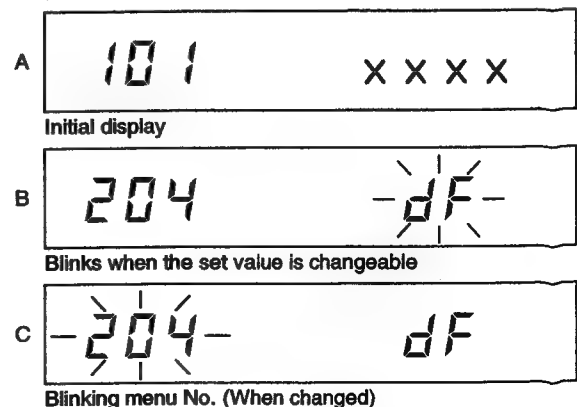
If the MENU button is pressed during operations, the menu will be exited without registering changes made in the settings.

##### Basic Operations of Buttons

Button	Function
ADVANCE button	Changes the set value Menu No. + (Increase)
SHIFT button	Moves between displayed digits Menu No. - (Decrease)
RESET (MENU SET) button	Registers the set value (Returns to the menu selection mode) Starts the adjustment
MENU button	Returns to the state before the menu mode Interrupts the adjustment



Display window (LCD)



☐ is the factory setting

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS
101	—		ADV. SHIFT	Sets the calendar and clock. Use the SHIFT button to move between the digits to be set. (Year → Month → Day → X0 Hours → 0X Hours → X0 Minutes → 0X Minutes → X0 Seconds → 0X Seconds → Year)
201	HOURS METER DISPLAY		SHIFT	Displays how long the head drum was used, how long the tape was driven, and operating time in order.. A: How long the head drum was used b: How long the tape was driven C: Operating time (When power is turned ON)  *Each time Menu No. 201 is displayed and the SHIFT button is pressed, the display changes in the following order. (201 → A → b → C → 201)
204	FRAME MODE SELECTION For DSR-390 For DSR-370	 [dF]/ndF	ADV.	Selects the time code generator drop frame mode and non-drop frame mode dF: Drop frame mode ndF: Non drop frame mode
206	BATTERY REMAINDER DISPLAY SELECTION	 [AUto]/nlcd/LI/Antr/nl-H	ADV.	Sets/switches the battery remainder display. AUto: The kind of the battery is automatically distinguished. nlcd: Nickel-cadmium battery (NP-1B, BP-90A) LI: Lithium ion battery (BP-L40/L60/L60A/L90/L90A) Antr: Anton digital battery nl-H: Nickel-hydrogen battery (BP-M50/M100)
207	STANDBY TIMER SETTING	 01/03/05/[08]	ADV.	Sets the time for releasing the standby mode. Can be selected from one minute, 3 minutes, 5 minutes, and 8 minutes.
210	AUTO CHECK FUNCTION SETTING	 [oFF]/on	ADV.	Automatically inspects if there are any problems in the basic operations of this unit, connections between this unit and the camera before starting to shoot. When oFF is displayed: When the RESET button is pressed, auto check is not performed, and instead, Menu No. is displayed again. When on is displayed: When the RESET button is pressed, auto check is started. After auto check is complete, press the MENU button to exit from the menu mode.
211	CLIP LINK FUNCTION SETTING	 [on]/oFF	ADV.	Setting when the clip link shooting is not executed. on: Clip link function ON oFF: Clip link function OFF
212	AUDIO RECORDING MODE SETTING	 [48]/32	ADV.	Sets audio signal recording mode 48: 48 kHz 2 channel mode 32: 32 kHz 4 channel mode (Records CH-1, CH-2 only)

- For details on the USER MENU, refer to the Operating Instructions.
- Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button.

☐ is the factory setting

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS
213	AUDIO REFERENCE LEVEL SELECTION	<div>213 -20</div> <div><input type="checkbox"/>-20/-12</div>	ADV.	Selects the audio reference level. -20: -20 dB (DSR-390/370) -18: -18 dB (DSR-390P/370P) -12: -12 dB
214	AUDIO FADE SELECTION	<div>214 oFF</div> <div>on/<input type="checkbox"/>oFF</div>	ADV.	Selects the fade in/fade output mode at the starting and ending points of audio recording. on: Fades in/out. oFF: No fades in/out.
220	SETUP ADD SELECTION For DSR-390 For DSR-370	<div>220 oFF</div> <div>on/<input type="checkbox"/>oFF</div>	ADV.	Set when adding setup to the video signal during playback.
221	SETUP REMOVE SETTING For DSR-390 For DSR-370	<div>221 oFF</div> <div>on/<input type="checkbox"/>oFF</div>	ADV.	Set when eliminating setup from the video signal that the setup is added to during recording.

- For details of the USER MENU, refer to the Operating Instructions.
- Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button.

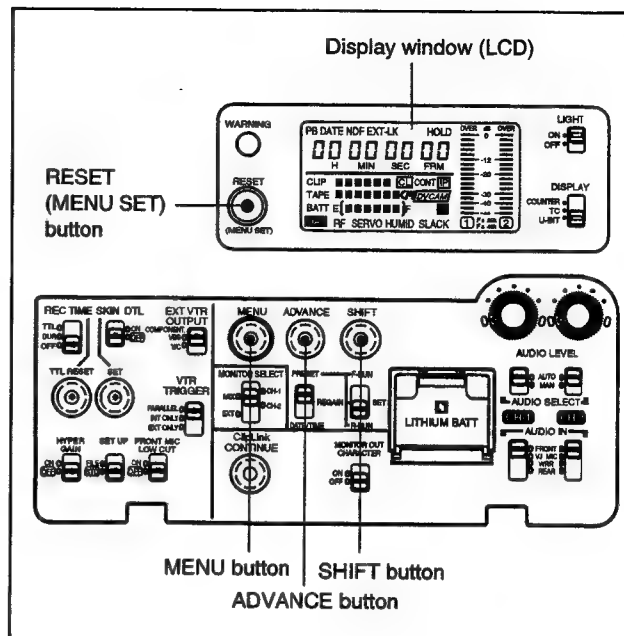
### Basic Operations of Buttons

Button	Function
ADVANCE button	Changes the set value Menu No. + (Increase)
SHIFT button	Moves between displayed digits Menu No. - (Decrease)
RESET (MENU SET) button	Registers the set value (Returns to the menu selection mode)
MENU button	Returns to the state before the menu mode

## 4-1-2. System Menu

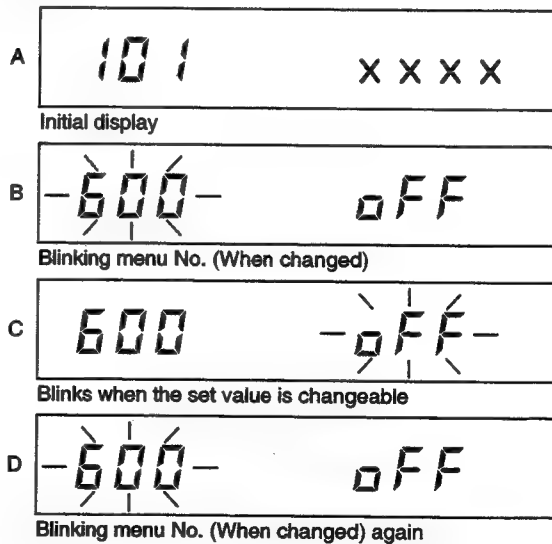
### Operating the System Menu

1. Press the MENU button while pressing the SHIFT button in the TC panel. "101 xxxx" is displayed on the display window (LCD). (Fig. A.)  
Release the SHIFT button while pressing the MENU button.



2. After about 1 second, check that "600 off" is displayed, and release the MENU button. (Fig. B.)
3. Press the ADVANCE button or SHIFT button repeatedly until the Menu No. on the display window (LCD) becomes the desired Menu No.  
Pressing the ADVANCE button (+ button) will switch and display the menu in the following order.  
600 → 301 → 308 → 401 → 402...513 → 600...  
Pressing the SHIFT button (- button) will switch and display the menu in the following order.  
600 → 513 → 509 → 503...301 → 600...
4. Display the desired Menu No., press the RESET (MENU SET) button.  
The current value setting will blink, the value will be enabled to be changed. (Fig. C.)
5. Press the ADVANCE button and display the desired value.
6. Press the RESET (MENU SET) button. The set value is registered. The Menu No. blinks again. (Fig. D.)
7. Press the MENU button.  
The display window (LCD) returns to the state before the menu display.

Display window (LCD)



☐ is the factory setting

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS
301	CCZ MIC LEVEL SELECT	<div>301 OFF</div> <div>on/OFF</div>	ADV.	CCZ MIC LEVEL SELECT Forcibly set to -60 dBu when CCU is connected. on: -60 dBu oFF: -20 dBu
308	TC PHASE CORRECTION ON/OFF SELECT	<div>308 on</div> <div>on/oFF</div>	ADV.	Selects whether to perform phase correction or not. on: TC bit 0 starts from Low. oFF: TC bit 0 start is undefined. Normally set to ON.
401	BACK TALLY MODE SELECT	<div>401 OFF</div> <div>on/OFF</div>	ADV.	Selects BACK TALLY mode. on: Real REC mode oFF: REC mode and WARNING display
402	HUMID MODE SELECT	<div>402 OFF</div> <div>on/OFF</div>	ADV.	on: Even if condensation occurs, REC operation is continued if VTR is set to REC mode. At other times, same as oFF. oFF: When condensation occurs, HUMID ALARM is displayed to protect the tape. VTR stops operating only for a certain period of time when set by HUMID TIMER. (Refer to Section 4-3 for details.)
403	ROM VERSION DISPLAY	<div>40354 x x x</div>	RESET	When the RESET button is pressed, the subject switches accordingly in the order KY → SY → SV → SP → IP → DV → KY and the ROM version is displayed. (The display on the left shows the case the SY microcomputer is selected.)
405	STANDBY OFF INHIBIT ON/OFF	<div>405 OFF</div> <div>on/OFF</div>	ADV.	Selects whether to perform STANDBY OFF operation or not. on: STANDBY OFF operation is prohibited. Therefore STANDBY OFF is not performed. oFF: STANDBY OFF is performed at the time set by the STANDBY TIMER.
406	PB TC OUT SELECT	<div>406 OFF</div> <div>on/OFF</div>	ADV.	Selects PB TC OUT. on: PB TC is output during playback. oFF: PB TC is not output. (TC is output from the generator at all times.)
501	BATTERY PRESET ADJUSTMENT 1	<div>501 x x x</div>	ADV. SHIFT RESET	Sets the reference voltage of the voltage detection circuit which detects the 11.0 V to 12.5 V range. (Refer to Section 3-14 for the setting method.)
502	BATTERY END ADJUSTMENT	<div>502 x x x</div>	ADV. SHIFT RESET	The battery end (end of battery life) can be set within the 11.0 V to 12.5 V range. (Refer to Section 3-14 for the setting method.)

Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button.

# Note

Even if Menu No. 600 is "on," it will automatically go "oFF" when the power is turned OFF.

☐ is the factory setting

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS																									
503	CALENDAR DISPLAYS	<div>503 x x x</div> <div>Std/UC/J/CE</div>	ADV.	Selects window (LCD) date display (Setting format of U-BIT with TC mode switch 1/TC panel set to DATE/TIME) Std: According to internal DIP SW (NTSC is UC/J, PAL is CE only) UC: Month/day/year J: Year/month/day CE: Date/month/year																									
509	HUMID TIMER OFF	<div>509 x x x</div>	RESET	Releases HUMID TIMER When set to HUMID MODE OFF at factory setting Menu No. 402, HUMID ALARM is displayed to protect the tape, and VTR stops operations only for a certain period of time set by the HUMID TIMER when condensation occurs. However, when condensation is removed manually, the HUMID TIMER can be released at the menu. (For details on how to release the HUMID TIMER, refer to Section 3-3.)																									
513	BATTERY PRESET ADJUSTMENT 2	<div>513 x x x</div>	ADV. SHIFT RESET	Sets the reference voltage of the voltage detection circuit which detects the 12.0 to 15.9 V range. (Refer to Section 2-14. for how to setting.)																									
522	SERIAL NO. SETTING	<div>522</div>	ADV. SHIFT RESET	Model code setting 1. Press the RESET (MENU SET) button and display the "type". 2. Set the model code. <table border="1"> <thead> <tr> <th></th><th>DSR-370</th><th>DSR-370P</th><th>DSR-390</th><th>DSR-390P</th></tr> </thead> <tbody> <tr> <td>UC</td><td>06</td><td>—</td><td>0F</td><td>—</td></tr> <tr> <td>J</td><td>07</td><td>—</td><td>10</td><td>—</td></tr> <tr> <td>SY</td><td>—</td><td>08</td><td>—</td><td>11</td></tr> <tr> <td>CN</td><td>—</td><td>08</td><td>—</td><td>11</td></tr> </tbody> </table> 3. Press the RESET (MENU SET) button. The set value is registered, and the Serial No. screen is displayed. Serial No. setting 4. Check that "no" is displayed on the LCD, and set the Serial No. 5. Press the RESET (MENU SET) button and registers the Serial No.		DSR-370	DSR-370P	DSR-390	DSR-390P	UC	06	—	0F	—	J	07	—	10	—	SY	—	08	—	11	CN	—	08	—	11
	DSR-370	DSR-370P	DSR-390	DSR-390P																									
UC	06	—	0F	—																									
J	07	—	10	—																									
SY	—	08	—	11																									
CN	—	08	—	11																									
523	SERIAL NO. CHECK	<div>523</div>	RESET	Check the Serial No. at current. <div> <div>06 10814</div> <div>→ Destination</div> <div>→ Serial No.</div> </div> When using M523, the LCD displays as above.																									
600	MAINTENANCE MENU ON/OFF SELECT	<div>600 oFF</div> <div>on/oFF</div>	ADV.	Sets the MAINTENANCE MENU (menu No. 601 to 755) ON/OFF. on: MAINTENANCE MENU are displayed and setting changeable. off: MAINTENANCE MENU are not displayed.																									

Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button.

## Basic Operations of Buttons

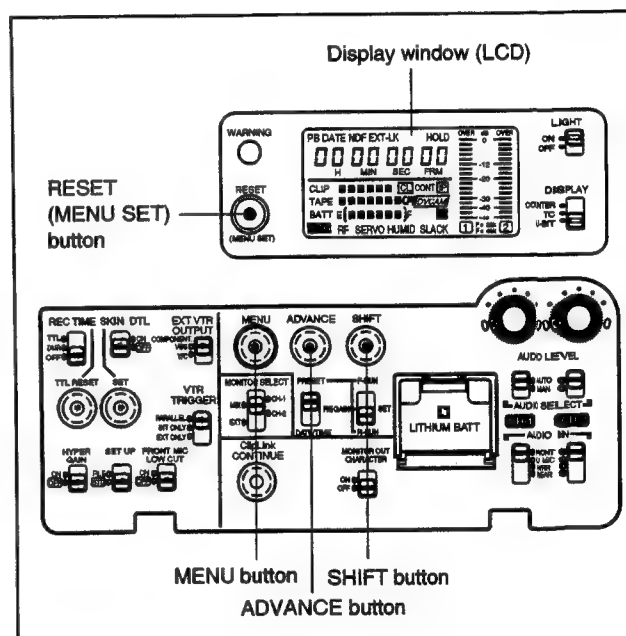
Button	Function
ADVANCE button	Changes the set value Menu No. + (Increase)
SHIFT button	Moves between displayed digits Menu No. - (Decrease)

Button	Function
RESET (MENU SET) button	Registers the set value (Returns to the menu selection mode) Starts the adjustment
MENU button	Returns to the state before the menu mode Interrupts the adjustment

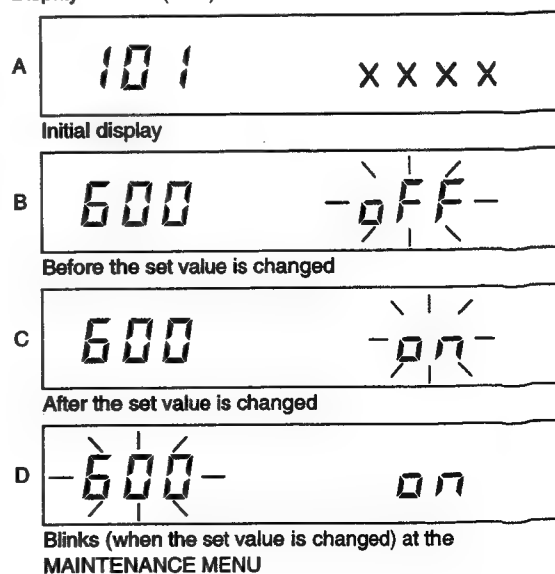
### 4-1-3. Maintenance Menu

#### Operating the MAINTENANCE MENU

- Press the MENU button while pressing the SHIFT button in the TC panel. "101 xxxx" is displayed on the display window (LCD). (Fig. A.)  
Release the SHIFT button while pressing the MENU button.
- Check that "600 OFF" is displayed one second later, and release the MENU button.
- Press the RESET (MENU SET) button with Menu No. 600 displayed. ("OFF" blinks.) (Fig. B.)
- Press the ADVANCE button and select "on." (Fig. C.)
- Press the RESET button. ("600" blinks.) (Fig. D.)  
This enables the MAINTENANCE MENU (Menu No. 600 to 755) to be set.  
\* Even if Menu No. 600 is set to "on," the SYSTEM MENU can be displayed and settings can be changed.
- Press the ADVANCE button or SHIFT button repeatedly until the Menu No. on the display window (LCD) becomes the desired Menu No.  
Pressing the ADVANCE button (+ button) will switch and display the menu in the following order.  
600 → 601 → 603 → 604...513 → 600...  
Pressing the SHIFT button (- button) will switch and display the menu in the following order.  
600 → 513 → 509 → 503...601 → 600...  
7. Press the RESET (MENU SET) button at the desired setting, and perform settings and adjustments at each menu.
- Press the MENU button.  
The display window (LCD) returns to the state before the menu display.



Display window (LCD)





# Note

When the MENU button is pressed before results are displayed (during adjustments) for Menus No. 601, 605, 607, 608, and 609, "Abort" will be displayed and the adjustments will be stopped. This is displayed until normal operations can be performed (2 seconds at the shortest).

☐ is the factory setting

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS
601	CAPSTAN FG DUTY ADJUSTMENT	<div>601 ----</div> <div>(Adjusting)</div>	RESET	When the RESET (MENU SET) buttons is pressed, capstan FG DUTY automatic adjustment is started. After the adjustment, data is written in the EEPROM, and the adjustment results are displayed on the display window (LCD) (YES or no). (For details, refer to Section 10 VTR Block Electrical Alignment.)
603	SLACK MUTE SETTING	<div>603 OFF</div> <div>on/OFF</div>	ADV.	Sets slack detection mute ON/OFF. on: Slack mute ON off: Slack mute OFF Press the RESET (MENU SET) button, and set slack mute ON/OFF using the ADVANCE button. Note) This setting is effective only while the power is turned ON. When the power is turned OFF, it is automatically turned OFF.
604	TRACKING ADJUSTMENT CENTER ITI MODE SELECTION	<div>604 OFF</div> <div>OFF/10/5/20</div>	ADV.	Selects single frequency during recording/playback and recording in the center ITI mode. off: when the normal recording/playback mode is set. 10: Single frequency is 10 MHz during recording 5: Single frequency is 5 MHz during recording 20: Single frequency is 20 MHz during recording Note) This setting is effective only while the power is turned ON. When the power is turned OFF, it is automatically turned OFF.
605	SWITCHING POSITION ADJUSTMENT	<div>605 ----</div> <div>(Adjusting)</div>	RESET	Performs automatic adjustments of the switching position. (For details, refer to Section 7 Tape Path Alignment.)
606	PLAYBACK MODE SELECTION	<div>606 Aut</div> <div>Aut/10/15</div>	ADV.	Selects playback mode. Aut: Data is detected and mode is automatically determined. 10: Fixed at SP mode. 15: Fixed at SSP mode.
607	REEL FG DUTY ADJUSTMENT	<div>60x ----</div> <div>(Adjusting)</div>	RESET	Automatically adjusts the reel FG DUTY. YES: Adjustment OK no: Adjustment NG (For details, refer to Section 10 VTR Block Electrical Alignment.)
608	REEL TORQUE ADJUSTMENT 1		STOP F.FWD REW EJECT	Adjusts the reel torque. YES: Ends after saving adjustment data. no: Adjustment NG and error cause (For details, refer to Section 6-38.)
609	REEL TORQUE ADJUSTMENT 2			Adjusts the reel torque. YES: Ends after saving adjustment data. no: Adjustment NG and error cause (For details, refer to Section 6-38.)

Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button. For basic operation of buttons, refer to the beginning of Section 4-1. Menu (LCD).

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS
610	CAPSTAN TEST MODE	<div>61x --</div> <p>(During test mode)</p>	RESET	Rotates the capstan at the fixed voltage.
611	REEL TEST MODE			Rotates the reel at the fixed voltage.
612	DRUM TEST MODE			Rotates the drum at the fixed voltage.
613	FUNCTION CAM TEST MODE		STOP EJECT	While the following buttons are pressed, performs threading/unthreading. STOP button: Performs threading. EJECT button: Performs unthreading.
660+ Page9	VTR D/A Y LEVEL ADJ.	• DISPLAY WINDOW (LCD) <div>660 tAdj</div> <p>(Adjusting)</p> • VIEWFINDER SCREEN (MONITOR) <div>→ PAGE 9 (NEXT→V PREV→A) VTR Y : 130 VTR R-Y : 145 VTR B-Y : 145 R-Y DELAY : 128 B-Y DELAY : 128 EXIT MENU (YES→PUSH)</div>	ADV. SHIFT RESET MENU DIAL	• For details, refer to Section 10 VTR Block Electrical Alignment. • Regarding viewfinder screen (MONITOR) operation, refer to "Section 4-2. Menu (Viewfinder)."
	PB Y/B-Y DELAY ADJ.			
	PB Y/R-Y DELAY ADJ.			
	PB R-Y LEVEL ADJ.			
	PB B-Y LEVEL ADJ.			
660+ Page10	VTR PB Y SYNC LEVEL ADJ.	<div>→ PAGE 10 (NEXT→V PREV→A) EE S-Y : 155 EE S-C : 155 VTR BST : 125 VTR SYNC : 100 PB VBS : 170 EXIT MENU (YES→PUSH)</div>		
	PB BURST LEVEL ADJ.			
	PB VBS LEVEL ADJ.			
	EE CHROMA LEVEL ADJ.			
	EE Y LEVEL ADJ.			
661+ page9	VTR D/A Y LEVEL ADJ.	• DISPLAY WINDOW (LCD) <div>661 tAdj</div>	Adjustment with internal COLOR BARS signal possible.	
	PB R-Y LEVEL ADJ.			
	PB B-Y LEVEL ADJ.			
661+ page10	PB Y SYNC LEVEL ADJ.	• VIEWFINDER SCREEN (MONITOR)		
	PB BURST LEVEL ADJ.			
	VTR PB COMPOSITE LEVEL ADJ.			

Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button. For basic operation of buttons, refer to the beginning of Section 4-1. Menu (LCD).

### Notes

- During SEt indication: Initializing starts by pressing the RESET button.
- During ESC indication: Menu returns to the “Menu Item Select Mode” by pressing the RESET button without start up the initializing.

MENU No.	MENU DESCRIPTION	DISPLAY WINDOW (LCD)	BUTTON USED	CONTENTS
700	REC CURRENT ADJ.	<div>700 x - x x</div> <div>(When changing data)</div>	RESET	For details, refer to Section 10 VTR Block Electrical Alignment.
701	PLL ADJ.			
702	AGC DELAY ADJ.	<div>x x x x x</div>		
704	AUTO EQ ADJ.	<div>(When changing data)</div> <div>x x x n o</div> <div>(Save NG)</div>		
750	VA EEPROM (SY) INITIALIZE	<div>--- --</div> <div>(When changing data)</div>	RESET	Initialize the SY EEPROM (IC501) on the DPR-141C board. If “no” is displayed when pressing the RESET button, initializing data is not saved correctly.
751	VA EEPROM (SP) INITIALIZE			Initialize the SP EEPROM (IC752) on the DPR-141C board. If “no” is displayed when pressing the RESET button, initializing data is not saved correctly.
752	KY EEPROM ECHO BACK DATA PRESET	<div>--- SEt</div> <div>(Starting initialization)</div>		Presetting results are displayed when pressing the RESET button. YES: Preset OK no: Preset NG
753	MECHANICAL CONTROL ADJ. ITEM INITIALIZE	<div>--- ESC</div> <div>(Stopping initialization)</div>	ADV. RESET	Initialize the EEPROM (IC1) on the HN-227 board. Saved results of initializing data are displayed by pressing the RESET button. YES: Save OK noEO: Save NG or already initialized
754	ERROR HISTORY INITIALIZE			Initializing of error history can be performed. Saved results of initializing data are displayed by pressing the RESET button. YES: Save OK no: Save NG
755	RP ADJ. ITEM INITIALIZE			Initialize the EEPROM (IC770) on the RP-91 board. Saved results of initializing data are displayed by pressing the RESET button. YES: Save OK no: Save NG

Buttons used: RESET → RESET (MENU SET) button, ADV. → ADVANCE button, MENU → MENU button, SHIFT → SHIFT button. For basic operation of buttons, refer to the beginning of Section 4-1. Menu (LCD).

## 4-2. Menu (Viewfinder)

### 4-2-1. Operation of Service Mode

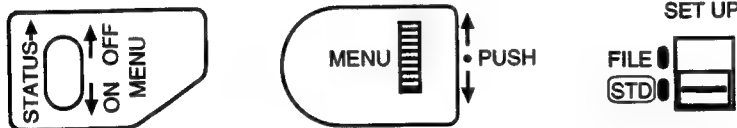
- **Service Mode**

There are the four major menus, Basic menu and Advanced menu for user, and Service menu, File menu.  
The unit enters the service mode by setting the switch S811 (ADJ/OPE) on the FP-118A board to ADJ position.

- **Switches**

For details about switches, refer to the Operating Instructions.

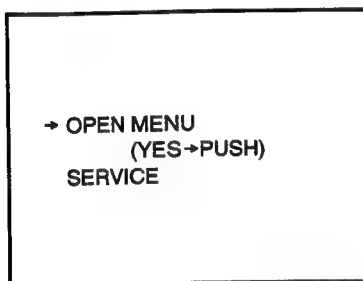
— MENU switch —      — MENU dial —      — SET UP switch —



- **Menu Selection Screen**

The following menu select screen is displayed by setting the switch S811 on the FP-118A board to “ADJ” position.

Menu selection screen



- **Moving Cursor (→)**

Push the MENU switch toward on. Or, turn the MENU dial during blinking the cursor.

- **Menu Selection**

Turn the MENU dial during blinking the menu name. (By turning the MENU dial, menu name will be changed (SERVICE ⇔ BASIC ⇔ ADVANCE ⇔ FILE ⇔ SERVICE) cyclically.)

By pressing the MENU dial during blinking the menu name, cursor blinks.

- **Open the Service Menu or File Menu**

1. Move the cursor to menu name, Set the mode to SERVICE or FILE by turning the MENU dial.
2. Push the MENU switch toward on, Move the cursor to OPEN MENU. Or, push the MENU dial (cursor blinks), and turn the MENU dial to move the cursor to OPEN MENU.
3. Push the MENU dial.

Normal menu operation can be performed after proceeding to Page of each menu.

When each menu has been closed, it is returned to the Menu Selection screen.

- **Connection**

Menu screen can be seen on the viewfinder screen or by the MONITOR OUT connector.

## 4-2-2. Service Menu

### • Page 1 RESET

(For DSR-390/370)

```
→PAGE1 (NEXT→▼ PREV→▲)
RESET
  (YES→PUSH)
DEST : UC
ROM VER : ***

EXIT MENU (YES→PUSH)
```

All adjusting values with electronic volume control of each board that are unit-independent can be restored to their standard setting values. (Refer to Section 4-3.)

\* Move the cursor to "DEST" position, select "UC," then move the cursor to "RESET," and then press the MENU dial.

(For DSR-390P/370P)

```
→PAGE1 (NEXT→▼ PREV→▲)
RESET
  (YES→PUSH)
ROM VER : ***

EXIT MENU (YES→PUSH)
```

\* Move the cursor to "RESET," and then press the MENU dial.

### • Page 2 Shading Correction

```
→PAGE2 (NEXT→▼ PREV→▲)
EXTENDER  OFF
AUTO SHAD
  (YES→PUSH)
R W. SHAD : 128
G W. SHAD : 128
B W. SHAD : 128

EXIT MENU (YES→PUSH)
```

EXTENDER      Current extender status display  
AUTO SHAD      Performing of auto shading correction  
R W.SHAD/G W.SHAD/B W.SHAD  
                 White shading correction of V  
                 Standard (correction 0) = 128

The shading correction data in this page are stored to eight memories that correspond to lenses 1, 2, 3 and 4 for EXTENDER ON and for EXTENDER OFF respectively. The lens number corresponds LENS SEL in page 4 of the Advanced menu.

R W. SHAD, G W. SHAD and B W. SHAD set the correction value correspond to setting of LENS SEL and EXTENDER ON/OFF. For details, refer to "Adjusting the Lens" in Chapter 5 "Adjustments and Settings" of the Operating Instructions.

### • Page 3 Flare Adjustment

```
→PAGE3 (NEXT→▼ PREV→▲)
R FLARE : 0
G FLARE : 0
B FLARE : 0

EXIT MENU (YES→PUSH)
```

R FLARE/G FLARE/B FLARE  
                 Flare correction  
                 (0 = no correction)

#### • Page 4 Pre Knee Setting

→PAGE4 (NEXT→▼ PREV→▲)  
M.PKNEE1 : 155  
M.PKNEE2 : 190  
M.PKNEE3 : 255  
M.PKNEE4 : 0  
R PKNEE : 128  
B PKNEE : 128  
  
EXIT MENU (YES→PUSH)

		Standard Value
M.PKNEE1	Usual master pre-knee point:	155
M.PKNEE2	Master pre-knee point in -3 dB gain:	190
M.PKNEE3	Master pre-knee point in frame read mode:	255
M.PKNEE4	Master pre-knee point DPR (2 pixel read) ON:	0
P PKNEE	Fine adjustment for the R channel's pre-knee point:	128
B PKNEE	Fine adjustment for the B channel's pre-knee point:	128

#### • Page 5 Camera Component Level Adjustment

→PAGE5 (NEXT→▼ PREV→▲)  
W Y LEV : ---  
W R-Y LEV : ---  
W B-Y LEV : ---  
Y LEV : 120  
R-Y LEV : 111  
B-Y LEV : 100  
SYNC LEV : 80  
SETUP LEV : 135  
EXIT MENU (YES→PUSH)

W Y LEV	Not in use
W R-Y LEV	Not in use
W B-Y LEV	Not in use
Y LEV	4:3 Camera Y level adjustment
R-Y LEV	4:3 Camera R-Y level adjustment
B-Y LEV	4:3 Camera B-Y level adjustment
SYNC LEV	4:3 Camera SYNC level adjustment
SETUP LEV	Camera SETUP level adjustment (NTSC model only adjustable when setup is on.)

#### • Page 6 Camera Clamp Level Adjustment

→PAGE6 (NEXT→▼ PREV→▲)  
Y CLP : 128  
R-Y CLP : 120  
B-Y CLP : 120  
  
EXIT MENU (YES→PUSH)

Y CLP	Camera Y clamp level adjustment
R-Y CLP	Camera R-Y clamp level adjustment
B-Y CLP	Camera B-Y clamp level adjustment

#### • Page 7 Chroma / Viewfinder Adjustment

→PAGE7 (NEXT→▼ PREV→▲)  
R-Y C/B : 110  
R-Y BST : 0  
B-Y C/B : 110  
B-Y BST : 75  
VF SYNC : 170  
VF BLKG : 135  
VF Y : 0  
  
EXIT MENU (YES→PUSH)

R-Y C/B	Camera R-Y carrier balance adjustment
R-Y BST	Camera R-Y burst level adjustment
B-Y C/B	Camera B-Y carrier balance adjustment
B-Y BST	Camera B-Y burst level adjustment
VF SYNC	Viewfinder video sync level adjustment
VF BLKG	Viewfinder video blanking level adjustment
VF Y	Not in use

• Page 8 Chroma Subcarrier Adjustment

→PAGE8 (NEXT→▼ PREV→▲)

SC FREQ : 2550  
SC-H : 450

EXIT MENU (YES→PUSH)

SC FREQ Subcarrier frequency adjustment  
SC-H SC-H phase adjustment

• Page 9 VTR Output Adjustment 1

→PAGE9 (NEXT→▼ PREV→▲)

VTR Y : 130  
VTR R-Y : 145  
VTR B-Y : 145  
R-Y DELAY : 128  
B-Y DELAY : 128

EXIT MENU (YES→PUSH)

VTR Y VTR Y level adjustment  
VTR R-Y VTR R-Y level adjustment  
VTR B-Y VTR B-Y level adjustment  
R-Y DELAY VTR R-Y phase adjustment  
B-Y DELAY VTR B-Y phase adjustment

• Page 10 VTR Output Adjustment 2

→PAGE10 (NEXT→▼ PREV→▲)

EE S-Y : 155  
EE S-C : 155  
VTR BST : 125  
VTR SYNC : 100  
PB VBS : 170

EXIT MENU (YES→PUSH)

EE S-Y VTR EE S-Y level adjustment  
EE S-C VTR EE S-C level adjustment  
VTR BST VTR burst level adjustment  
VTR SYNC VTR SYNC level adjustment  
PB VBS PB picture VBS level adjustment

• **Page 11 Various Setting 1**  
(For DSR-390/370)

→PAGE11 (NEXT→▼ PREV→▲)

SETUP : ON  
 READ OUT : FD  
 V BLKG : 20H

EXIT MENU (YES→PUSH)

		Standard Setting
SETUP	Setup ON/OFF selection	ON
READ OUT	FD (Field): Switches CCD to field read mode	FD
	FM (Frame): Switches CCD to frame read mode	
V BLKG	System blanking width setting (19/20/21H)	20H

**Note**

In frame read mode, higher vertical resolution can be obtained, however, image lag increases. If shutter function is on with frame read mode, sensitivity drops in half against the normal.

(For DSR-390P/370P)

→PAGE11 (NEXT→▼ PREV→▲)

COMP LEV : 525  
 READ OUT : FD

EXIT MENU (YES→PUSH)

		Standard Setting
COMP LEV	525/700 selection of color difference output (pin 26)	525
READ OUT	FD (Field): Switches CCD to field read mode	FD
	FM (Frame): Switches CCD to frame read mode	

• **Page 12 Test Mode**

→PAGE12 (NEXT→▼ PREV→▲)

TEST : OFF  
 R-Y : ON  
 B-Y : ON

EXIT MENU (YES→PUSH)

		Standard Setting
TEST	TEST: OFF Normal operation mode (TEST SAW is not displayed.)	OFF
	TEST: 1 Displays 100 % TEST SAW.	
	TEST: 2 Displays 226 % TEST SAW.	
	TEST: 3 Displays 226 % TEST SAW in the lower side of screen.	
R-Y	ON/OFF control of R-Y output	ON
B-Y	ON/OFF control of B-Y output	ON

• **Page 13 CCD Block Number Information**

→PAGE13 (NEXT→▼ PREV→▲)

HEAD 1 : G  
 HEAD 2 : V  
 HEAD 3 : 0  
 HEAD 4 : 0  
 HEAD 5 : 0  
 HEAD 6 : 1  
 HEAD 7 : 6

EXIT MENU (YES→PUSH)

HEAD1 - 7 CCD block number

Be sure to input the CCD block number according to the label on the side of CCD unit after replacing the TG-187/187P board or the EEPROM (IC3) on the TG-187/187P board.

Input method: Turn the MENU dial to enter the letter or number.  
Example: If the label says "CXB05548", input "CX05548".



## • Page 14 CCD Block Setting Information

→PAGE14 (NEXT→▼ PREV→▲)

R RG	:	---
G RG	:	---
B RG	:	---
R SUB	:	128
G SUB	:	128
B SUB	:	128
TPC	:	---

EXIT MENU (YES→PUSH)

R RG	Not in use
G RG	Not in use
B RG	Not in use
R SUB	R channel sub-voltage setting
G SUB	G channel sub-voltage setting
B SUB	B channel sub-voltage setting
TPC	Not in use

### Note

Values shown on the screen depend on each CCD unit. Never change the value.

## • Page 15 Various Setting 2

→PAGE15 (NEXT→▼ PREV→▲)

GAMMA	:	ON
MATRIX	:	ON
DETAIL	:	ON
APERTURE	:	ON
FLARE	:	ON

EXIT MENU (YES→PUSH)

		Standard Setting
GAMMA	ON/OFF selection of gamma	ON
MATRIX	ON/OFF selection of matrix	ON
DETAIL	ON/OFF selection of detail	ON
APERTURE	ON/OFF selection of aperture	ON
FLARE	ON/OFF selection of flare correction	ON

## • Page 16 Title Color Setting

→PAGE16 (NEXT→▼ PREV→▲)

R TITLE	:	75
G TITLE	:	75
B TITLE	:	75
R EDGE	:	0
G EDGE	:	0
B EDGE	:	0

ABC123

EXIT MENU (YES→PUSH)

When displaying the title in the video signal, title color can be set manually.  
Besides, edge color of title character can be set manually.

		Standard Setting
R TITLE	Title's R level (0/25/50/75):	75
G TITLE	Title's G level (0/25/50/75):	75
B TITLE	Title's B level (0/25/50/75):	75
R EDGE	Title edge's R level (0/25/50/75):	0
G EDGE	Title edge's G level (0/25/50/75):	0
B EDGE	Title edge's B level (0/25/50/75):	0
ABC123	Indication for checking actual title color	

## • Page 17 Various Setting 3

→PAGE17 (NEXT→▼ PREV→▲)

M.GAMMA	:	132
R.GAMMA	:	± 0
B.GAMMA	:	± 0
M.BLACK	:	2070

EXIT MENU (YES→PUSH)

		Standard Setting
M.GAMMA	Standard value setting of master gamma:	132
R.GAMMA	R channel's gamma offset setting:	±0
B.GAMMA	B channel's gamma offset setting:	±0
M.BLACK	Standard value setting of master black:	
	For DSR-390/370:	2070
	For DSR-390P/370P:	2075

## • Page 18 Clip / Iris Related Setting

→PAGE18 (NEXT→▼ PREV→▲)  
 WHT CLIP : 255  
 IRIS GAIN : 128  
 IRIS MODE : 100  
 IRIS SET : 144  
 LOW LIGHT : 144  
 EXIT MENU (YES→PUSH)

		Standard Setting
WHT CLIP	Standard value setting of white clip level: Lower value setting makes the clip level low.	255
IRIS GAIN	Setting of auto iris gain: Following speed of auto iris can be changed.	128
IRIS MODE	Setting of auto iris peak average ratio: Set the ratio of auto iris's peak and average values.	100
IRIS SET	Setting of the target value of auto iris:	144
LOW LIGHT	Setting of low light warning indication level: For DSR-390/370: For DSR-390P/370P:	144 160

## • Page 19 Color Temperature Calculation Reference Setting

→PAGE19 (NEXT→▼ PREV→▲)  
 COLOR TEMP CAL.  
 (YES→PUSH)  
 R : 128  
 B : 128  
 EXIT MENU (YES→PUSH)

COLOR TEMP CAL.	Captures the reference value of color temperature indication
R	R channel's color temperature indication ; • Reference value setting • Result of capturing the reference value
B	B channel's color temperature indication ; • Reference value setting • Result of capturing the reference value

### Notes

In COLOR TEMP CAL., it captures the color temperature calculation reference value during operating of White Balance auto adjustment. Normally, it is not necessary to perform this adjustment.

If the color temperature value, which is indicated on the screen, differs from an actual value, perform CCD OUT level adjustment and etc. and to capture the reference value as follows:

1. Shoot the pattern (color temperature = 3200 K).
2. Set the WHT BAL switch to A or B, and perform Auto White adjustment.
3. Move the cursor on the COLOR TEMP CAL. position and push the MENU dial.

## • Page 20 FILTER Display Setting

```

→PAGE20 (NEXT→▼ PREV→▲)

FILTER1 : 3200
FILTER2 : 5600+1/8ND
FILTER3 : 5600
FILTER4 : 5600+1/64ND

EXIT MENU (YES→PUSH)

```

### FILTER 1 to 4

Set the screen indication in accordance with a kind of filter attached.

### Setting

1. Turn the MENU dial to move the cursor to FILTER No. on the screen.
2. Push the MENU dial.
3. Turn the MENU dial to display the indication to be set.  
By turning the MENU dial, indication will be changed as follows:  
3200 ⇔ CROSS ⇔ 5600 ⇔ 5600 + 1/4ND ⇔ 5600 + 1/8ND ⇔ 5600 + 1/16ND ⇔ 5600 + 1/32ND ⇔ 5600 + 1/64ND
4. To set the indication, push the MENU dial.

## • Page 21 Self Diagnosis 1

```

→PAGE21 (NEXT→▼ PREV→▲)

DIAG ERROR RESET
(YES→PUSH)

MEMORY BACKUP
(YES→PUSH)

EXIT MENU (YES→PUSH)

```

### DIAG ERROR RESET

This item is used for erasing an error check results and a history of error items.

### MEMORY BACKUP

This item is used when back up the EEPROMs data on the TG, DPR, and ES boards to EEPROM on the AT board. Backup is needed when the TG, DPR, or ES board has been replaced.

If there is a communication error between the TG, DPR, or ES board's EEPROM and microcomputer when the power is turned on, be sure to use the backed up data in EEPROM on the AT board.

### To back up the memory

1. Turn the MENU dial to move the cursor to MEMORY BACKUP position.
2. Push the MENU dial.

### Note

The "DIAG ERROR RESET" and "MEMORY BACKUP" will be carried out when the RESET in Page 1 is executed.

Refer to Section 3-5 Self Diagnosis for Page 22 to 24.

• **Page 25 Current Status Display**

→PAGE25 (NEXT→▼ PREV→▲)  
  
POWER : 13.0V  
TIS : 250h  
R GAIN : 800h  
B GAIN : 800h  
IRIS POS : 800h  
KWC : 800h  
  
EXIT MENU (YES→PUSH)

Not in use

• **Page 26 TG ROM Operation**

→PAGE26 (NEXT→▼ PREV→▲)  
  
TG ROM  
  
  
  
EXIT MENU (YES→PUSH)

Not in use

• **Page 27 Carrier Adjustment When DPR (Dual Pixel Readout) is on.**

→PAGE27 (NEXT→▼ PREV→▲)  
  
R D.DARK : 128  
G D.DARK : 128  
B D.DARK : 128  
  
EXIT MENU (YES→PUSH)

R D.DARK	R Carrier balance adjustment
G D.DARK	G Carrier balance adjustment
B D.DARK	B Carrier balance adjustment

### 4-2-3. File Menu

#### • Page 1 All Reset (For DSR-390/370)

→ PAGE1 (NEXT→▼ PREV→▲)

ALL RESET  
(YES→PUSH)  
DEST : UC

EXIT MENU (YES→PUSH)

Each item value in all file is restored to their standard setting (factory setting).

**DEST** Select the destination according to the unit in use.  
The standard setting differs depending on the destination.  
(Displays destination for NTSC only.)

This is the same contents with service menu "Page 1".

#### (For DSR-390P/370P)

→ PAGE1 (NEXT→▼ PREV→▲)

ALL RESET  
(YES→PUSH)

EXIT MENU (YES→PUSH)

#### • Page 2 File Name Change / File Reset

→ PAGE 2 (NEXT→▼ PREV→▲)

FILE NO. : 1  
FILE NAME :  
(STD )  
FILE RESET  
(YES→PUSH)

EXIT MENU (YES→PUSH)

<b>FILE NO.</b>	File No. of operation item
<b>FILE NAME</b>	File name of operation item file
<b>FILE RESET</b>	Carries out reset of the selected file data

#### • Page 3 File Recall

→ PAGE3 (NEXT→▼ PREV→▲)

FILE RECALL  
FILE : \*HISAT  
SELECT FILE  
STD  
CHG FILE  
(YES→PUSH)

EXIT MENU (YES→PUSH)

<b>FILE</b>	Indicates the currently-called file name
<b>SELECT FILE</b>	Selects file to be called
<b>CHG FILE</b>	Executes to call the file

#### • Page 4 File Basic Setting

→ PAGE4 (NEXT→▼ PREV→▲)

M.BLACK	:	± 0
STRETCH	:	± 0
M.GAMMA	:	± 0
DTL LEV	:	± 0
V DTL LEV	:	- 10
DTL FREQ	:	M

EXIT MENU (YES→PUSH)

M.BLACK	Master black level setting
STRETCH	Black stretch level setting
M GAMMA	Master gamma level setting
DTL LEV	Detail level setting
V DTL LEV	V detail level setting
DTL FREQ	Detail center frequency setting

The file data selected with SETUP switch are displayed on the PAGE 4 to 11. When data value changed, the file data selected with SETUP switch are rewritten.

When SETUP switch is switched while any of the PAGE 4 to 11 is displayed, the display changes in response to the SETUP switch position.

#### • Page 5 File Hue Setting

→ PAGE5 (NEXT→▼ PREV→▲)

SAT	:	± 0
HUE	:	± 0
SKIN SAT	:	± 0
SKIN HUE	:	± 0

EXIT MENU (YES→PUSH)

SAT	Saturation setting
HUE	HUE setting
SKIN SAT	Chroma setting of SKIN AREA
SKIN HUE	HUE setting of SKIN AREA

#### • Page 6 File Knee / Gamma Setting

→ PAGE6 (NEXT→▼ PREV→▲)

M.KNEE P	:	300
M.KNEE S	:	90
GAMMA TBL	:	B
COMB	:	OFF

EXIT MENU (YES→PUSH)

M.KNEE P	Standard value setting of master knee point
M.KNEE S	Standard value setting of master knee slope
GAMMA TBL	Selection of GAMMA table A/B A: Rise-up gain is 3.5 times. B: Rise-up gain is 4.0 times.
COMB	Selection of Comb filter OFF/GR/R/G

#### • Page 7 File Matrix Center Value Setting

→ PAGE7 (NEXT→▼ PREV→▲)

R-G LEV	:	38
R-B LEV	:	10
G-R LEV	:	6
G-B LEV	:	15
B-R LEV	:	6
B-G LEV	:	7

EXIT MENU (YES→PUSH)

R-G LEV	Setting of R-G coefficient center value
R-B LEV	Setting of R-B coefficient center value
G-R LEV	Setting of G-R coefficient center value
G-B LEV	Setting of G-B coefficient center value
B-R LEV	Setting of B-R coefficient center value
B-G LEV	Setting of B-G coefficient center value

• **Page 8 File Matrix Variable Width Setting**

→ PAGE8 (NEXT→▼ PREV→▲)

R-G WIDTH	:	40
R-B WIDTH	:	20
G-R WIDTH	:	40
G-B WIDTH	:	-40
B-R WIDTH	:	-20
B-G WIDTH	:	-20

EXIT MENU (YES→PUSH)

R-G WIDTH	Setting of hue variable width of R-G coefficient
R-B WIDTH	Setting of hue variable width of R-B coefficient
G-R WIDTH	Setting of hue variable width of G-R coefficient
G-B WIDTH	Setting of hue variable width of G-B coefficient
B-R WIDTH	Setting of hue variable width of B-R coefficient
B-G WIDTH	Setting of hue variable width of B-G coefficient

• **Page 9 File Detail Related Setting 1**

→ PAGE9 (NEXT→▼ PREV→▲)

LEVEL DEP	:	52
V DTL LIM	:	20
CRISP	:	6

EXIT MENU (YES→PUSH)

LEVEL DEP	Setting of level-depend level
V DTL LIM	Setting of V detail compression level
CRISP	Setting of crispening level

• **Page 10 File Detail Related Setting 2**

→ PAGE10 (NEXT→▼ PREV→▲)

APERTURE	:	145
AFT DTL	:	25
KNEE APT	:	48
HIGH DTL	:	63
CCS LEV	:	5

EXIT MENU (YES→PUSH)

APERTURE	Setting of aperture level
AFT DTL	Setting of detail added after gamma circuit
KNEE APT	Setting of detail over knee point
HIGH DTL	Setting of high light detail
CCS LEV	Setting of cross color suppress level

• **Page 11 File Stretch Setting**

→ PAGE11 (NEXT→▼ PREV→▲)

STRP1	:	20
STRP2	:	45
PRSP1	:	8
PRSP2	:	63

EXIT MENU (YES→PUSH)

STRP1	Setting of black stretch point1
STRP2	Setting of black stretch point2
PRSP1	Setting of black compress point1
PRSP2	Setting of black compress point2

• **Page 12 Store the File**

→ PAGE12 (NEXT→▼ PREV→▲)

FILE STORE  
FILE:\*HISAT  
DISTINATION FILE  
USER1  
STORE FILE  
(YES →PUSH)

EXIT MENU (YES→PUSH)

**FILE**

Indicates the currently-called file name

**DESTINATION FILE**

Selection of file to which the data are stored

**STORE FILE**

Executes to store the file



### 4-3. Reset Items and EEPROMs Data List

#### Factory Setting

○ : This item is adjusted in the factory for each characteristic of the unit.

× : This item is not adjusted in the factory.

#### RESET

○ : This item returns to the default value when performing the RESET of each menu (Advanced menu, Service menu and File menu).

× : This item does not return to the default value when performing the RESET of each menu.

#### EEPROM

○ : The adjustment value or setting value of this item is stored to each EEPROM (TG (IC3/TG-187 or TG-187P), AT (IC504/AT-150), DPR (IC301/DPR-141C), ES (IC103/ES-31 or ES-31P)).

#### Basic Menu

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
1	A.IRIS	×	○	×	×	×	○	×	×	±0
	DTL LEV	×	○	×	○	×	○	×	×	Standard value of the called file.
	M.BLACK	×	○	×	○	×	○	×	×	Standard value of the called file.
	STRETCH	×	○	×	○	×	○	×	×	Standard value of the called file.
	SHUTTER	×	○	×	×	×	○	×	×	1/100 (NTSC), 1/60 (PAL)
2	SKIN DTL	×	○	×	×	×	○	×	×	0.5
	DL LEV	×	○	×	×	×	○	×	×	STD
	PRE. WHT	×	○	×	×	×	○	×	×	3200K (FILTER : 3200K, CROSS)
		×	○	×	×	×	○	×	×	5600K (FILTER : 5600K, 5600K + ND)
3	SELECT FILE	×	○	×	○	×	×	×	×	File name of the called file.
	CHG FILE	—	—	—	—	—	—	—	—	—
4	VIDEO IN	×	○	×	×	×	○	×	×	CAM
5	SC PHASE	×	○	×	×	×	○	×	×	0
	H PHASE	×	○	×	×	×	○	×	×	135
6	MARKER	×	○	×	×	×	○	×	×	ON
	DUR TIME	×	○	×	×	×	○	×	×	00 : 00
7	MARK/CUE	×	○	×	×	×	○	×	×	MARK
	CHG REEL NO.	—	×	×	×	×	○	×	×	Space
8	TITLE SET	×	○	×	×	×	○	×	×	Space
9	TITLE IND	—	—	—	—	—	—	—	—	—

## Advanced Menu

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
1	ALL RESET	—	—	—	—	—	—	—	—	—
2	LOW	X	O	X	X	X	O	X	X	0dB
	MID	X	O	X	X	X	O	X	X	9dB
	HIGH	X	O	X	X	X	O	X	X	18dB
	DL	X	O	X	X	X	O	X	X	ON
3	AWB MEM	X	O	X	X	X	O	X	X	2
	tone	X	O	X	X	X	O	X	X	ON
	BARS	X	O	X	X	X	O	X	X	SMPTE (NTSC), EBU75 (PAL)
	REMOTE1	X	O	X	X	X	O	X	X	REC
	REMOTE2	X	O	X	X	X	O	X	X	MARK
	BAUD RATE	X	O	X	X	X	O	X	X	38400
	ILINK CTL	X	O	X	X	X	O	X	X	REC/P
4	MARKER	X	O	X	X	X	O	X	X	OFF
	LIMITS	X	O	X	X	X	O	X	X	OFF
	ZEBRA	X	O	X	X	X	O	X	X	1
	ZEBRA1	X	O	X	X	X	O	X	X	70%
	REC TIME	X	O	X	X	X	O	X	X	INT
	VF TALLY	X	O	X	X	X	O	X	X	×2
	(VF S DTL)	X	O	X	X	X	O	X	X	±0
	LENS SEL	X	O	X	X	X	O	X	X	1
5	SS IND	X	O	X	X	X	O	X	X	ALWAYS
	LL IND	X	O	X	X	X	O	X	X	ON
	IRIS IND	X	O	X	X	X	O	X	X	ON
	GAIN IND	X	O	X	X	X	O	X	X	ON
	FILTER IND	X	O	X	X	X	O	X	X	ON
	WHITE IND	X	O	X	X	X	O	X	X	ON
	SKIN IND	X	O	X	X	X	O	X	X	ON
6	AUDIO IND	X	O	X	X	X	O	X	X	ON
	TAPE IND	X	O	X	X	X	O	X	X	ON
	TC IND	X	O	X	X	X	O	X	X	ON
	ID IND	X	O	X	X	X	O	X	X	OFF
	ID SET	X	O	X	X	X	O	X	X	Space
7	EZ MODE	X	O	X	X	X	O	X	X	STD
	A.IRIS-AGC	X	O	X	X	X	O	X	X	F2.8
	A.IRIS-AE	X	O	X	X	X	O	X	X	F16
	AGC LIMIT	X	O	X	X	X	O	X	X	12dB
8	CLOCK IND	X	O	X	X	X	O	X	X	OFF
	DATE MODE	X	O	X	X	X	O	X	X	YY MM DD
	TIME MODE	X	O	X	X	X	O	X	X	12-hour clock

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
9	SELECT FILE	X	○	X	X	—	—	—	—	—
	CHG FILE	—	—	—	—	—	—	—	—	—
10	M.BLACK	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	STRETCH	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	M GAMMA	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	DTL LEV	X	○	X	X	X	○	X	X	10 <sup>**</sup>
	V DTL LEV	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	DTL FREQ	X	○	X	X	X	○	X	X	M <sup>**</sup>
11	SAT	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	HUE	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	SKIN SAT	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
	SKIN HUE	X	○	X	X	X	○	X	X	±0 <sup>**</sup>
12	DESTINATION FILE	X	○	X	X	X	X	X	X	USER1
	STORE FILE	—	—	—	—	—	—	—	—	—
13	RECALL DATA	—	—	—	—	—	—	—	—	—
14	STORE DATA	—	—	—	—	—	—	—	—	—
	NAME SET	X	—	—	—	—	—	—	—	Space

<sup>\*\*</sup>a : Standard value of FILE HISAT.

## Service Menu

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
1	DEST	○	×	×	×	×	○	×	×	—
	ROM VER.	○	×	○	×	×	○	×	×	—
2	EXTENDER	—	—	—	—	—	—	—	—	—
	AUTO SHAD	○	×	—	—	—	—	—	—	—
	R/G/B W.SHAD (1/OFF)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (1/ON)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (2/OFF)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (2/ON)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (3/OFF)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (3/ON)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (4/OFF)*b	○	×	×	×	×	○	×	×	128
	R/G/B W.SHAD (4/ON)*b	○	×	×	×	×	○	×	×	128
3	R FLARE	○	×	×	×	×	○	×	×	0
	G FLARE	○	×	×	×	×	○	×	×	0
	B FLARE	○	×	×	×	×	○	×	×	0
4	M.PKNEE1	×	×	○	×	×	○	×	×	155
	M.PKNEE2	×	×	○	×	×	○	×	×	190
	M.PKNEE3	×	×	○	×	×	○	×	×	255
	M.PKNEE4	×	×	○	×	×	○	×	×	0
	R PKNEE	×	×	○	×	×	○	×	×	128
	B PKNEE	×	×	○	×	×	○	×	×	128
5	W Y LEV	—	×	×	×	—	—	—	—	—
	W R-Y LEV	—	×	×	×	—	—	—	—	—
	W B-Y LEV	—	×	×	×	—	—	—	—	—
	Y LEV	○	×	×	×	×	×	○	×	120
	R-Y LEV	○	×	×	×	×	×	○	×	120
	B-Y LEV	○	×	×	×	×	×	○	×	120
	SYNC LEV	○	×	×	×	×	×	×	○	80
	SETUP LEV	○	×	×	×	×	×	×	○	140
6	Y CLP	○	×	×	×	×	×	×	○	130
	R-Y CLP	○	×	×	×	×	×	×	○	120
	B-Y CLP	○	×	×	×	×	×	×	○	120
7	R-Y C/B	○	×	×	×	×	×	×	○	110
	R-Y BST	○	×	×	×	×	×	×	○	0 (NTSC) 75 (PAL)
	B-Y C/B	○	×	×	×	×	×	×	○	110
	B-Y BST	○	×	×	×	×	×	×	○	75
	VF SYNC	×	×	×	×	×	×	×	○	170
	VF BLKG	×	×	×	×	×	×	×	○	140
	VF Y	×	×	×	×	×	×	○	×	0

\*b: The settings in parentheses ( ) show LENS SEL No. and ON or OFF of EXTENDER.

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
8	SC FREQ	○	×	×	×	×	×	×	○	1470
	SC-H	○	×	×	×	×	×	×	○	1300
9	VTR Y	×	×	×	×	×	×	○	×	130
	VTR R-Y	×	×	×	×	×	×	○	×	150
	VTR B-Y	×	×	×	×	×	×	○	×	150
	R-Y DELAY	×	×	×	×	×	×	○	×	128
	B-Y DELAY	×	×	×	×	×	×	○	×	128
10	EE S-Y	○	×	×	×	×	×	×	○	155
	EE S-C	○	×	×	×	×	×	×	○	155
	VTR BST	×	×	×	×	×	×	×	○	125
	VTR SYNC	×	×	×	×	×	×	×	○	100
	PB VBS	○	×	×	×	×	×	×	○	170
11	SETUP (NTSC)	○	×	○	×	×	○	×	×	ON (NTSC)
	READ OUT (NTSC)	×	×	○	×	×	○	×	×	FD (NTSC)
	V BLKG (NTSC)	×	×	○	×	×	○	×	×	20H (NTSC)
	or									
	COMP LEV (PAL)	×	×	○	×	×	○	×	×	525 (PAL)
	READOUT (PAL)	×	×	○	×	×	○	×	×	FD (PAL)
12	TEST	×	×	○	×	×	○	×	×	OFF
	R-Y	×	×	○	×	×	○	×	×	ON
	B-Y	×	×	○	×	×	○	×	×	ON
13	HEAD1	○	×	×	×	○	×	×	×	C
	HEAD2	○	×	×	×	○	×	×	×	U (NTSC), V (PAL)
	HEAD3	○	×	×	×	○	×	×	×	0
	HEAD4	○	×	×	×	○	×	×	×	0
	HEAD5	○	×	×	×	○	×	×	×	0
	HEAD6	○	×	×	×	○	×	×	×	0
	HAED7	○	×	×	×	○	×	×	×	0
14	R RG	—	×	×	×	—	—	—	—	—
	G RG	—	×	×	×	—	—	—	—	—
	B RG	—	×	×	×	—	—	—	—	—
	R SUB	○	×	×	×	○	×	×	×	130
	G SUB	○	×	×	×	○	×	×	×	130
	B SUB	○	×	×	×	○	×	×	×	130
	TPC	×	×	×	×	—	—	—	—	—
15	GAMMA	×	×	○	×	×	○	×	×	ON
	MATRIX	×	×	○	×	×	○	×	×	ON
	DETAIL	×	×	○	×	×	○	×	×	ON
	APERTURE	×	×	○	×	×	○	×	×	ON
	FLARE	×	×	○	×	×	○	×	×	ON

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
16	R TITLE	X	X	O	X	X	O	X	X	75
	G TITLE	X	X	O	X	X	O	X	X	75
	B TITLE	X	X	O	X	X	O	X	X	75
	R EDGE	X	X	O	X	X	O	X	X	0
	G EDGE	X	X	O	X	X	O	X	X	0
	B EDGE	X	X	O	X	X	O	X	X	0
17	M.GAMMA	X	X	O	X	X	O	X	X	132
	R.GAMMA	X	X	O	X	X	O	X	X	±0
	B.GAMMA	X	X	O	X	X	O	X	X	±0
	M.BLACK	O	X	O	X	X	O	X	X	2070 (NTSC), 2075 (PAL)
18	WHT CLIP	X	X	O	X	X	O	X	X	255
	IRIS GAIN	X	X	O	X	X	O	X	X	128
	IRIS MODE	X	X	O	X	X	O	X	X	100
	IRIS SET	X	X	O	X	X	O	X	X	144
	LOW LIGHT	X	X	O	X	X	O	X	X	144 (NTSC), 160 (PAL)
19	R	X	X	X	X	X	O	X	X	128
	B	O	X	X	X	X	O	X	X	128
20	FILTER1	X	X	O	X	X	O	X	X	3200K
	FILTER2	X	X	O	X	X	O	X	X	5600 + 1/8ND
	FILTER3	X	X	O	X	X	O	X	X	5600K
	FILTER4	X	X	O	X	X	O	X	X	5600 + 1/16ND
21	DIAG ERROR RESET	X	X	X	X	X	O	X	X	—
	MEMORY BACKUP	X	X	X	X	X	O	X	X	—
22	DISP SELECT	X	X	O	X	—	—	—	—	1
23	DISP SELECT	X	X	O	X	—	—	—	—	1
24	DISP SELECT	X	X	O	X	—	—	—	—	1
25	POWER	X	—	—	—	X	O	X	X	—
	TIS	X	—	—	—	X	O	X	X	—
	R GAIN	X	—	—	—	X	O	X	X	—
	B GAIN	X	—	—	—	X	O	X	X	—
	IRIS POS	X	—	—	—	X	O	X	X	—
	KWC	X	—	—	—	X	O	X	X	—
26	TG ROM	X	X	—	—	O	X	X	X	—
27	R D.DARK	X	X	X	X	X	O	X	X	128
	G D.DARK	X	X	X	X	X	O	X	X	128
	B D.DARK	X	X	X	X	X	O	X	X	128

## File Menu

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
1	ALL RESET	—	—	—	—	—	—	—	—	—
2	FILE NO.	X	X	X	O	—	—	—	—	—
	FILE NAME (Display)	X	X	X	O	—	—	—	—	—
	FILE NAME (Stored to FILE NO.1 to 8)	X	X	X	O	X	O	X	X	Default file name
	FILE RESET	—	—	—	—	—	—	—	—	—
3	SELECT FILE	—	—	—	—	—	—	—	—	STD/HISAT
	CHG FILE	—	—	—	—	—	—	—	—	—
4	M.BLACK	X	O	X	O	X	O	X	X	*C
	STRETCH	X	O	X	O	X	O	X	X	
	M.GAMMA	X	X	X	O	X	O	X	X	
	DTL LEV	X	O	X	O	X	O	X	X	
	V DTL LEV	X	X	X	O	X	O	X	X	
	DTL FREQ	X	X	X	O	X	O	X	X	
5	SAT	X	X	X	O	X	O	X	X	*C
	HUE	X	X	X	O	X	O	X	X	
	SKIN SAT	X	X	X	O	X	O	X	X	
	SKIN HUE	X	X	X	O	X	O	X	X	
6	M.KNEE P	X	X	X	O	X	O	X	X	*C
	M.KNEE S	X	X	X	O	X	O	X	X	
	GAMMA TBL	X	X	X	O	X	O	X	X	
	COMB	X	X	X	O	X	O	X	X	
7	R-G LEV	X	X	X	O	X	O	X	X	*C
	R-B LEV	X	X	X	O	X	O	X	X	
	G-R LEV	X	X	X	O	X	O	X	X	
	G-B LEV	X	X	X	O	X	O	X	X	
	B-R LEV	X	X	X	O	X	O	X	X	
	B-G LEV	X	X	X	O	X	O	X	X	
8	R-G WIDTH	X	X	X	O	X	O	X	X	*C
	R-B WIDTH	X	X	X	O	X	O	X	X	
	G-R WIDTH	X	X	X	O	X	O	X	X	
	G-B WIDTH	X	X	X	O	X	O	X	X	
	B-R WIDTH	X	X	X	O	X	O	X	X	
	B-G WIDTH	X	X	X	O	X	O	X	X	
9	LEVEL DEP	X	X	X	O	X	O	X	X	*C
	V DTL LIM	X	X	X	O	X	O	X	X	
	CRISP	X	X	X	O	X	O	X	X	

\*C : Refer to the File Menu Default Value List.

PAGE	Items	Factory setting	RESET			EEPROM				Default value
			ADVANCE	SERVICE	FILE	TG	AT	DPR	ES	
10	APERTURE	X	X	X	O	X	O	X	X	*c
	AFT DTL	X	X	X	O	X	O	X	X	
	KNEE APT	X	X	X	O	X	O	X	X	
	HIGH DTL	X	X	X	O	X	O	X	X	
	CCS LEV	X	X	X	O	X	O	X	X	
11	STRP1	X	X	X	O	X	O	X	X	*c
	STRP2	X	X	X	O	X	O	X	X	
	PRSP1	X	X	X	O	X	O	X	X	
	PRSP2	X	X	X	O	X	O	X	X	
12	DESTINATION FILE	X	X	X	O	—	—	—	—	File name of FILE No.6.
	STORE FILE	—	—	—	—	—	—	—	—	—

\*c : Refer to the File Menu Default Value List.



# File Menu Default Value List

Pages	Items	Default value					
		NO.1	NO.2	NO.3	NO.4	NO.5	NO.6 to 8
		STD	HISAT	FL	FILMLIKE	SVHS/VHS	USER1 to 3
4	M.BLACK	±0	±0	±0	10 (±0) *1	±0	±0
	STRETCH	±0	±0	±0	-8 (±0) *1	±0	±0
	M.GAMMA	±0	±0	±0	-33	±0	±0
	DTL LEV	±0	+10	±0	-60 (-99) *1	-70	±0
	V DTL LEV	±0	±0	±0	±0	-10	±0
	DTL FREQ	M	M	M	M	L	M
5	SAT	±0	±0	±0	±0	-5	±0
	HUE	±0	±0	±0	±0	±0	±0
	SKIN SAT	±0	±0	±0	±0	±0	±0
	SKIN HUE	±0	±0	±0	±0	±0	±0
6	M.KNEE P	310	310	310	380 (310) *1	310	310
	M.KNEE S	90	90	90	90	90	90
	GAMMA TBL	B	B	B	A	B	B
	COMB	OFF	OFF	OFF	OFF	OFF	OFF
7	R-G LEV	NTSC	52	80	94	12	52
		PAL	22	19	20	52	22
	R-B LEV	NTSC	10	20	-15	12	10
		PAL	15	36	20	14	15
	G-R LEV	NTSC	15	19	24	3	15
		PAL	5	13	15	0	5
	G-B LEV	NTSC	42	62	4	59	42
		PAL	27	48	29	26	27
	B-R LEV	NTSC	8	11	5	-6	8
		PAL	1	8	8	-11	1
	B-G LEV	NTSC	3	5	-9	30	3
		PAL	14	12	1	27	14
8	R-G WIDTH	40	40	40	40	40	40
	R-B WIDTH	20	20	20	20	20	20
	G-R WIDTH	20	20	20	20	20	20
	G-B WIDTH	-40	-40	-40	-40	-40	-40
	B-R WIDTH	-20	-20	-20	-20	-20	-20
	B-G WIDTH	-20	-20	-20	-20	-20	-20
9	LEVEL DEP	52	52	52	52	52	52
	V DTL LIM	20	20	20	20	20	20
	CRISP	10	10	10	10	10	10

\*1 : The values in parentheses ( ) show those for ROM versions 1.00 through 1.04 of IC703/AT-150 board.

Pages	Items	Default value					
		NO.1	NO.2	NO.3	NO.4	NO.5	NO.6 to 8
		STD	HISAT	FL	FILMLIKE	SVHS/VHS	USER1 to 3
10	APERTURE	128	128	128	80	80	128
	AFT DTL	10	10	10	10	40	10
	KNEE APT	24	24	24	63	24	24
	HIGH DTL	63	63	63	63	63	63
	CCS LEV	5	5	5	5	5	5
11	STRP1	20	20	20	20	20	20
	STRP2	45	45	45	45	45	45
	PRSP1	8	8	8	8	8	8
	PRSP2	63	63	63	63	63	63

## Section 5

### Periodic Maintenance and Inspection

#### 5-1. Maintenance Time Table

The times in the tables, indicating when parts are to be replaced, are not time guarantee for parts. Use these times as references for drawing up maintenance and inspection schedules for extending the life of the unit and tape use.

The time to replace parts differs according to the environments and conditions in which the unit is being used.

☆ : Replace   ◇ : Check (Adjustment)   ○ : Clean

Maintenance Parts			Hours Meter	Maintenance Time (H)			
Item	Part No.	Name	Display Mode	2000	4000	6000	8000
Drum Assembly	A-4900-064-	DEH-03A/J-RP	A	☆	☆	☆	☆
Drive Block							
LD Motor	A-8311-086-	LD Motor Block Assembly	A	◇	◇	◇	◇
Reel Motor	A-8311-088-	Shift Motor Assembly	A	—	◇	—	◇
Tension Regulator Band	X-3678-777-	TR Band Assembly	A	☆	☆	☆	☆
T Sub Reel	X-3608-225-	Sub Reel Gear (T) Assembly	A	☆	☆	☆	☆
S Sub Reel	X-3608-226-	Sub Reel Gear (S) Assembly	A	☆	☆	☆	☆
Idler Gear	X-3678-884-	Idler Gear Assembly	A	—	☆	—	☆
Capstan Motor	8-835-530-	DC Motor (SCD12A/J-N)	A	—	◇	—	◇
Brake Block							
T Hard Brake	A-8278-432-	Hard Brake Arm (T) Assembly	A	☆	☆	☆	☆
S Hard Brake	A-8278-433-	Hard Brake Arm (S) Assembly	A	☆	☆	☆	☆
T Soft Brake	X-3678-869-	Soft Brake Arm (T) Assembly	A	☆	☆	☆	☆
TL Soft Brake	X-3678-870-	Soft Brake (TL) Assembly	A	☆	☆	☆	☆
Tape Path Block							
Pinch Roller	X-3678-788-	Pinch Arm Assembly	A	☆	☆	☆	☆
Guide Roller TG-1,TG-8	3-604-702-	Roller TG-18	A	◇	◇	◇	◇
Guide Roller TG-2	A-8278-429-	TR Arm Assembly	A	◇	◇	◇	◇
Guide Roller TG-3	3-604-717-	Roller TG-3	A	◇	◇	◇	◇
Guide Roller TG-5	X-3604-927-	TG-5 Assembly 2	A	◇	◇	◇	◇
Guide Roller TG-7	3-748-777-	Roller TG-7	A	◇	◇	◇	◇
Tape Path	—	—	—	○	○	○	○
Cleaner							
Cleaning Roller	A-8311-505-	C Assembly	A	☆	☆	☆	☆
Others							
Cassette Memory Terminal	A-8311-396-	MIC Holder (C) Assembly	A	◇○	◇○	◇○	◇○

HOURS METER MODE    A: DRUM RUNNING

## 5-2. Hours Meter

An hours meter is provided in the MENU mode.  
The total operating time of the unit, total rotation time of the drum, and total running time of the tape are displayed on the window at the side.  
It is recommended that this hours meter be used as a reference for carrying maintenance.  
Display the hours meter using the following method.

1. When the MENU switch on the side is pressed, the following will be displayed.

<Display Example>



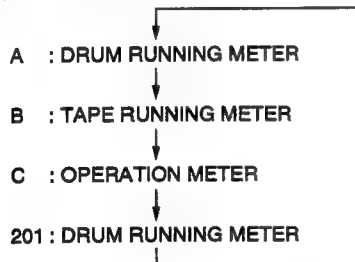
2. When the ADVANCE switch is pressed once, the following will be displayed.

<Display Example>



3. Each time the SHIFT switch is pressed, the display will change as follows.

<Display Example: A>



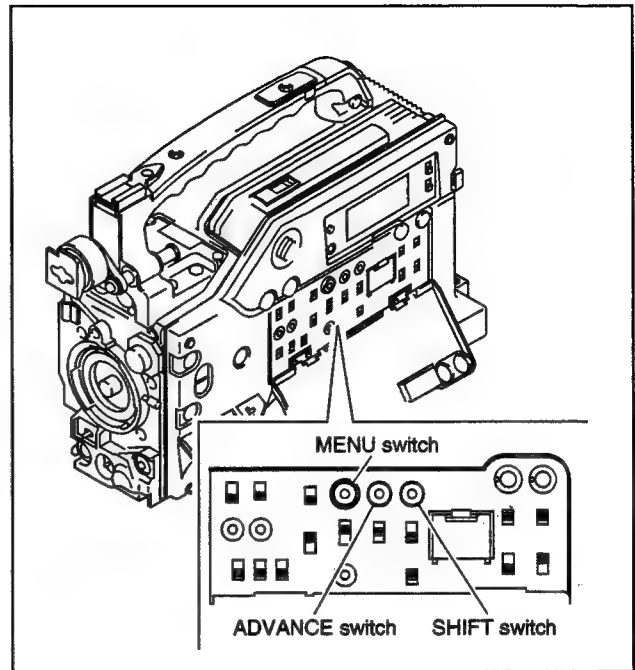
This means that the total time of the drum rotating is 150H.



4. To end the MENU mode, press the MENU switch again.

### Note

The hours meter data is preserved in the EEPROM (IC204) on the FP-118A board. Be sure to perform the EEPROM Echo Back Data Preset by Selecting Menu No.752 of maintenance menu when replacing the FP-118A board or EEPROM (IC204) on the FP-118A board. Therefore, the data which was written of powered on the last time, is written in the new EEPROM. However, when the error occurs while writing in the EEPROM after replacing the FP-118A board, replace the EEPROM (IC204) attached on the old board.



### 5-3. Maintenance after Repairs

After repairing the unit, carry out the following maintenance regardless of how long the unit has been used.

- Cleaning of video head
- Cleaning of tape path

### 5-4. Cleaning Method

To perform cleaning, remove the cover of the cassette up compartment cover. (Refer to 6-2. Replacement of Cassette Compartment Assembly.)

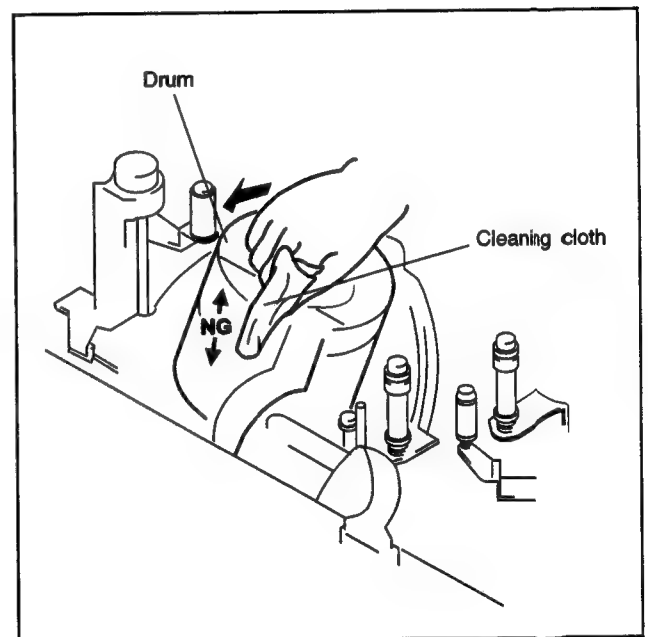
When loading cassette tapes after cleaning, wait for the cleaning liquid to evaporate completely.

#### (1) Cleaning the Rotary Drum Assembly

Using a cleaning cloth moistened with cleaning liquid, gently touch the cloth on the rotary drum assembly. Rotate the rotary upper drum slowly in the counterclockwise direction with your fingers to clean.

##### Note

Do not rotate the motor with the power turned ON nor rotate it in the clockwise direction with your fingers. Do not move the cleaning cloth over the head chip in the vertical direction, as this may damage the head chip. Never clean the head in this way.



## Section 6

### Replacement/Alignment of Major Parts

#### 6-1. General Information on Replacement/Alignment of Parts

##### 1. Cassette compartment

When replacing parts and adjusting mechanism parts, unless specified otherwise, remove the cassette compartment from the unit.

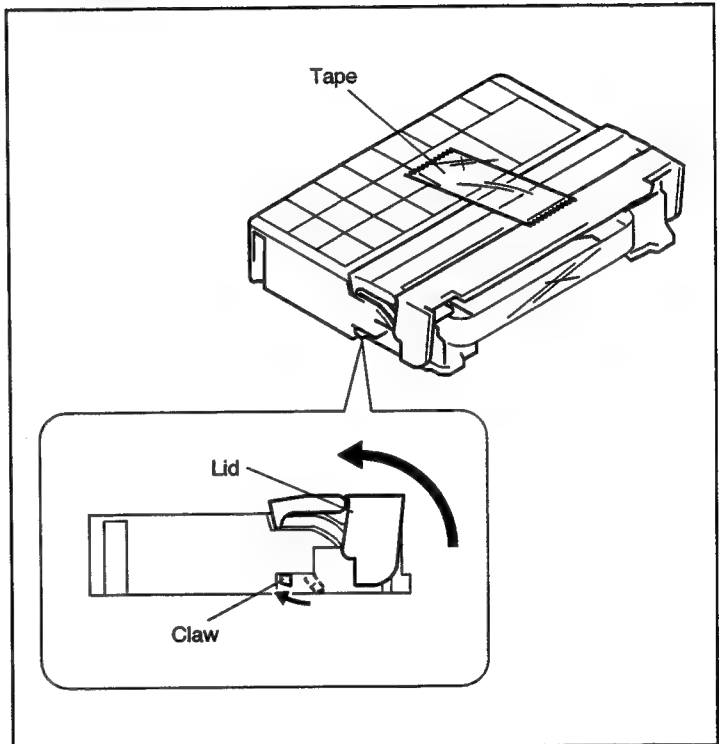
Details on how to replace the cassette compartment are provided in Section 6-2.

When setting the tape running state without the cassette compartment, open the cassette lid, and secure the lid with a tape, etc.

##### Mini cassette

- Move the one claw as shown in the figure, and open the lid.

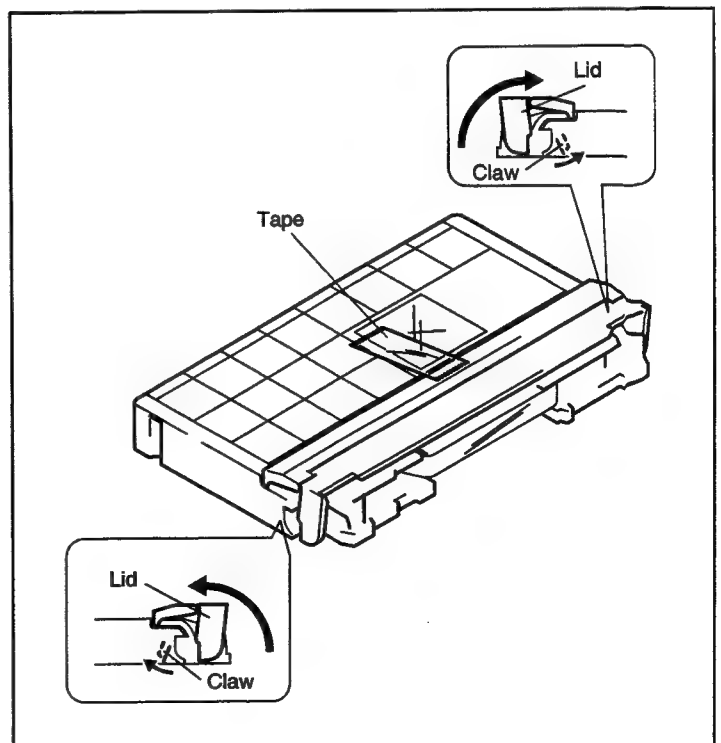
Mini cassette



##### Standard cassette

- Move the two claws as shown in the figure, and open the lid.

Standard cassette



## 2. Mode

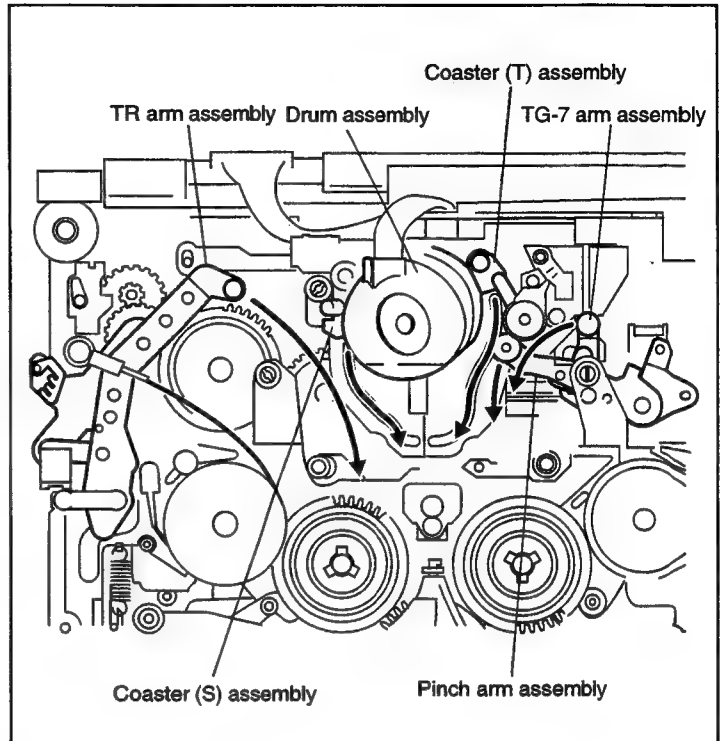
The TR arm assembly, coaster (S/T) assembly, pinch arm assembly and TG-7 arm assembly move and become in either threading end or unthreading end state.

In the above state, they can stay in any position unless the mode has been specified on the following pages.

### Threading end:

The TR arm assembly, coaster (S/T) assembly, and pinch arm assembly, and TG-7 arm assembly are positioned at the drum side as shown in the figure.

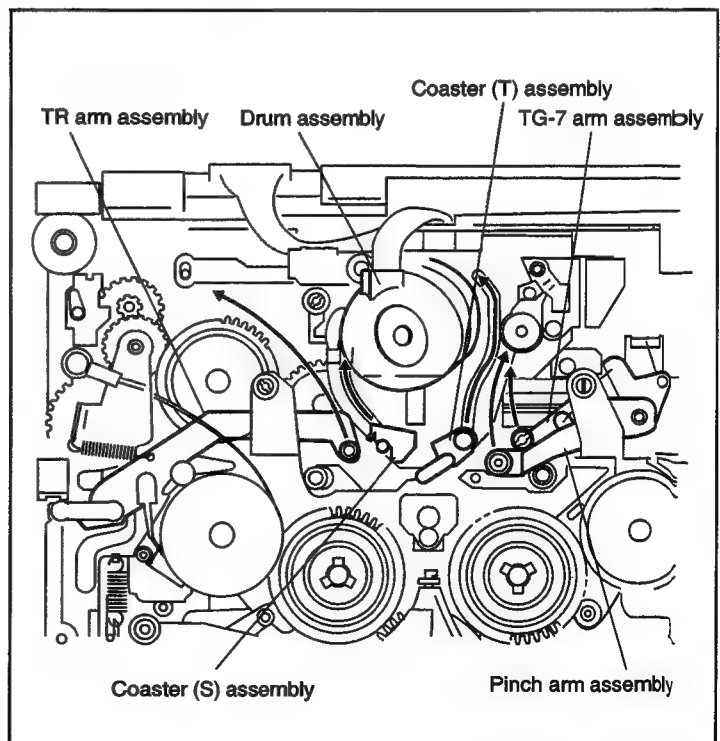
### Threading End



### Unthreading end:

The TR arm assembly, coaster (S/T) assembly, pinch arm assembly, and TG-7 arm assembly are positioned at the cassette side.

### Unthreading End



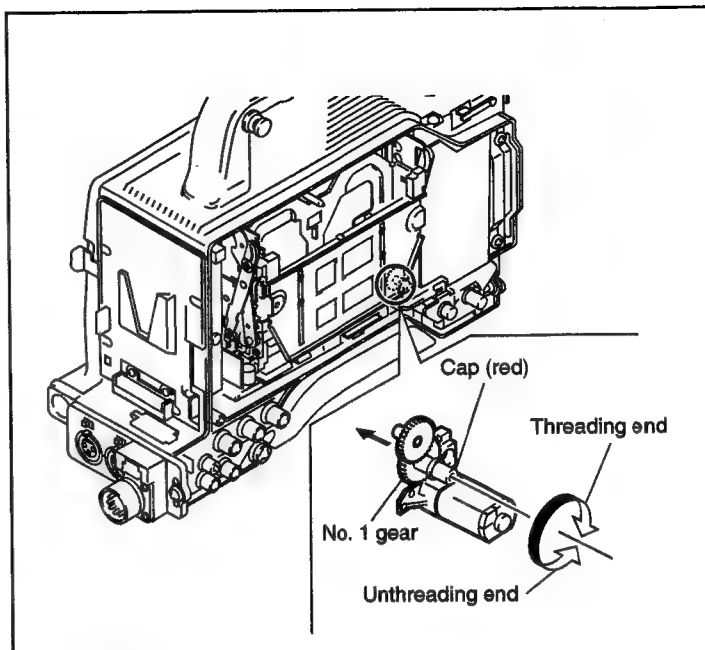
1) Setting manually

- Remove the left panel assembly.  
(Refer to Section 2-2-1.)
- Rotate the cap and No.1 gear shown in the figure in the arrow direction while pressing it down to set the threading end/unthreading end.

2) Setting with the menu

Select Menu No. 613, and set the function cam mode.

- Threading is carried out while the STOP button is pressed.
- Unthreading is carried out while the EJECT button is pressed.



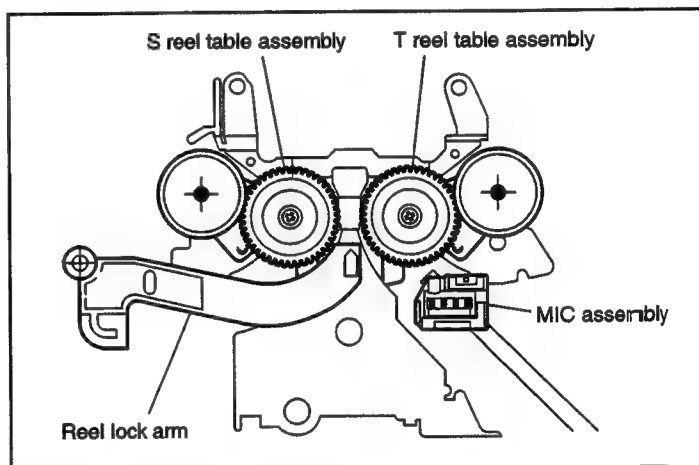
3. Reel Table Position

It is set to the mini cassette position/standard cassette position according to the position of the S reel table assembly/T reel table assembly.

Mini cassette position:

The reel lock arm, S reel table assembly/T reel table assembly and MIC assembly are positioned at the drum side as shown in the figure.

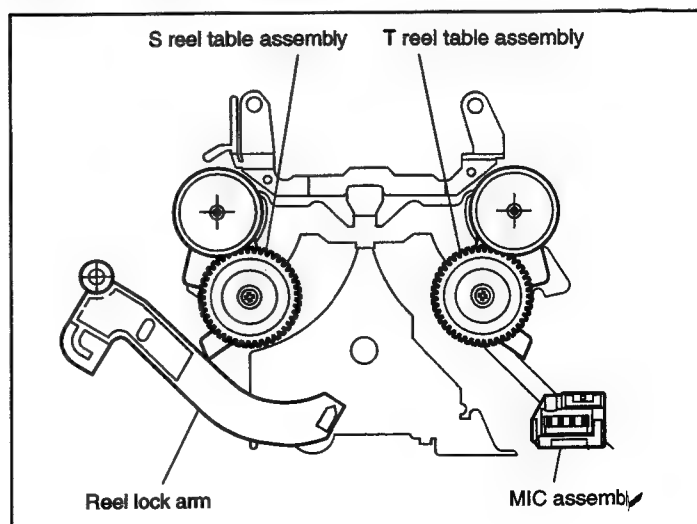
Mini cassette position



Standard cassette position:

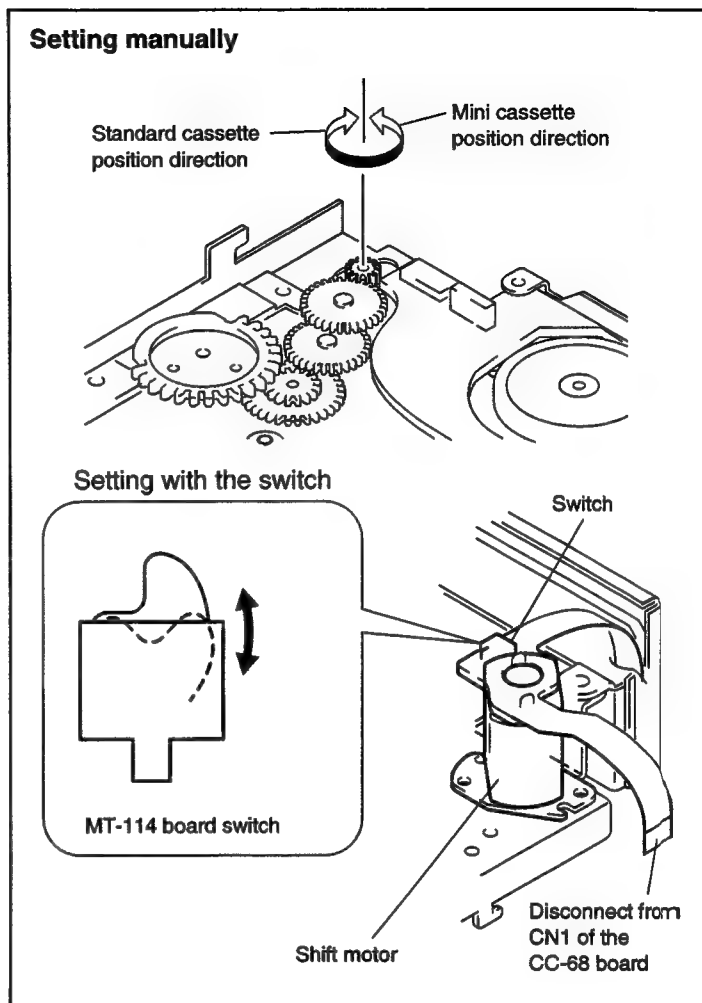
The reel lock arm, S reel table assembly/T reel table assembly and MIC assembly are positioned at the inserting side of the cassette as shown in the figure.

Standard cassette position





- 1) Setting manually
  - Open the right panel assembly.  
(Refer to Section 2-2-2.)
  - Remove the ES-31/ES-31P board and DPR-141C board.
  - Move up the cassette compartment.  
(Refer to Section 3-1.)
  - Rotate the gear of the shift motor shown in the figure in the arrow direction, to set the mini cassette position/standard cassette position.
- 2) Setting with the switch
  - Set the mode to the unthreading end.
  - Move up the cassette compartment.
  - Disconnect the connector (CN1) of the CC-68 board.
  - Turn ON the power.
  - Press the switch on the MT-114 board on the reel shift motor to move to the mini cassette position/standard cassette position.
4. Do not use the stopper washers that secure parts once they have been removed for attaching new parts. After replacing parts, always use new stopper washers.  
To attach stopper washers, push in until the space between the attached part and stopper washer is 0.1 to 0.2 mm.



## 6-2. Replacement of Cassette Compartment Assembly

Reel table position: Mini cassette position  
Mode: Unthreading end

### Removal

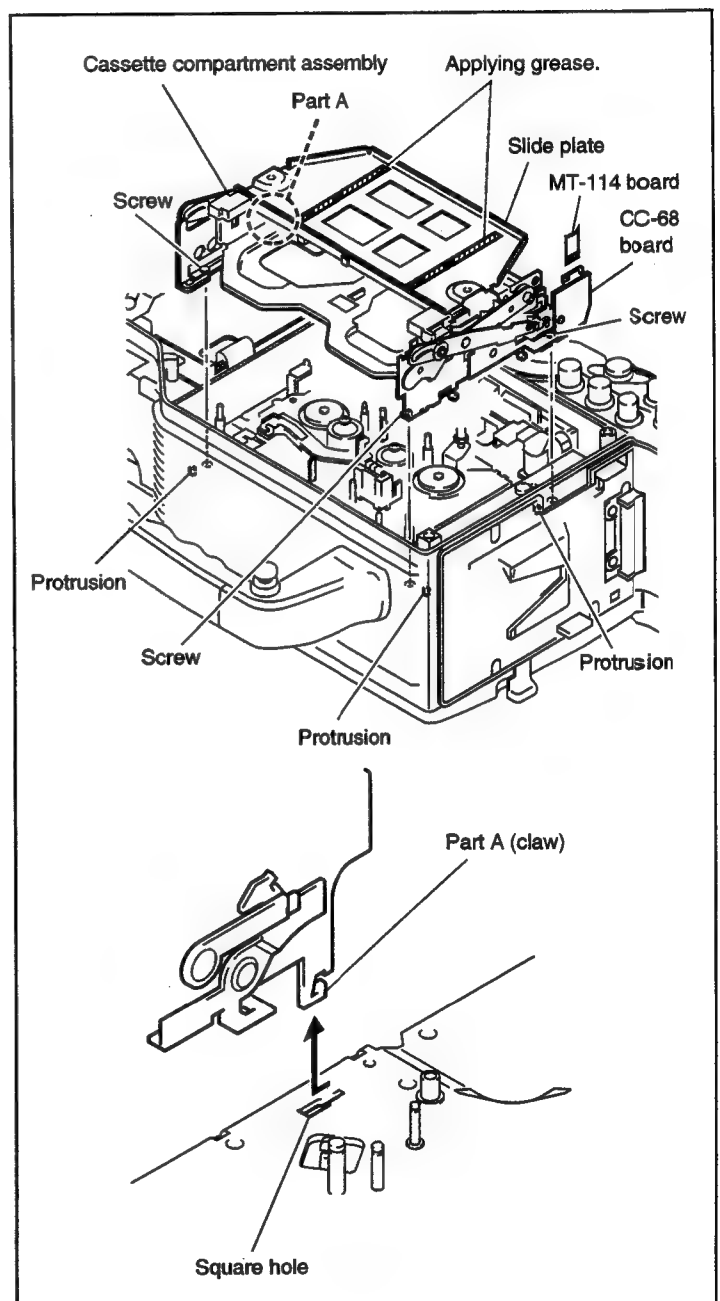
1. Eject and turn the cassette compartment assembly up.
2. Pull out the MT-114 board on the reel shift motor shown in the figure from the CC-68 board.
3. Loosen the three screws, remove part A from the square hole, and remove the cassette compartment assembly.

### Attachment

4. Apply a small quantity of the grease SGL-801 (7-651-000-11) to the two square holes (shown with oblique lines in the figure) on the slide plate, then apply it in all square holes entirely.
5. Attach the new cassette compartment assembly and removed parts in the reverse order of steps 1 to 3.

### Note

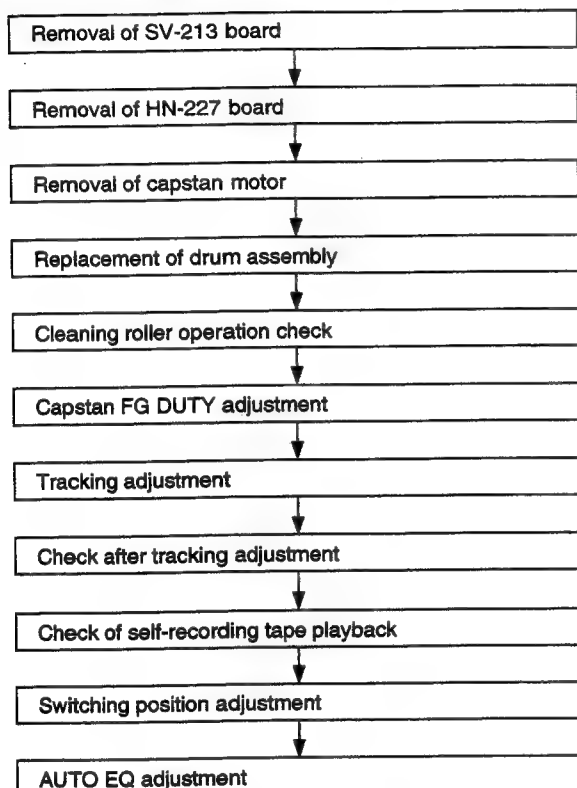
Adjust the cassette compartment assembly to the three protrusion on the mechanism chassis first before securing the screws.



## 6-3. Replacement of Drum Assembly

Reel table position: Standard cassette position  
Mode: Unthreading end

### Replacement Flowchart



### Removal

1. Remove the SV-213 board. (Refer to 2-9-8.)
2. Remove the HN-227 board. (Refer to 2-9-9.)
3. Remove the capstan motor. (Refer to 6-28.)
4. Disconnect the harness shown in the figure from the connector (CN771) of the RP-91 board.
5. Remove the three screws and remove the drum assembly.

### Attachment

6. Adjust the holes of the new drum assembly to the two protrusions shown in the figure, and attach using three screws.
  - Tightening torque: 0.0294 N·m (0.3 kg·cm)

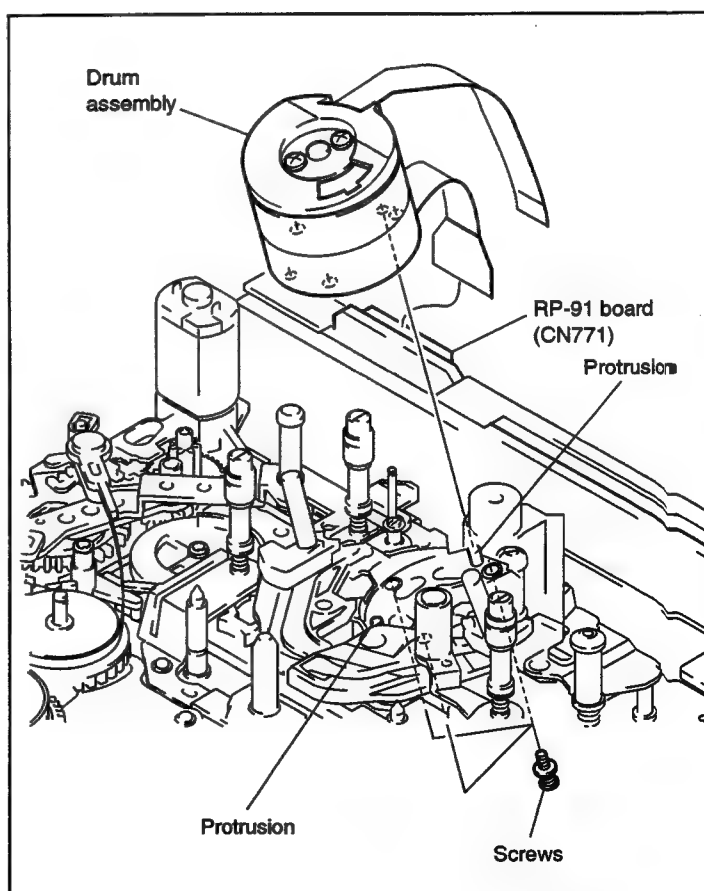
#### Note

When attaching, do not touch the tape path side of the drum to prevent it from scratching and becoming dirty.

7. Attach the removed parts in the reverse order of steps 1 to 4.

### Check/Adjustment

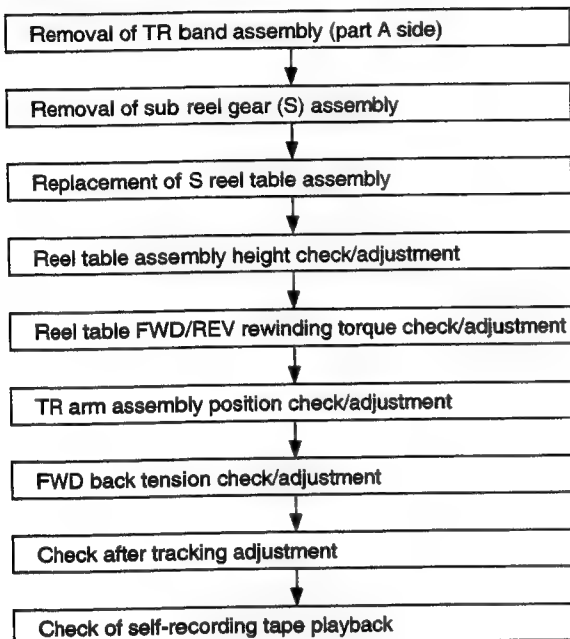
8. Perform the cleaning roller operation check.  
(Refer to step 3 in the Section 6-21.)
9. Perform the capstan FG DUTY adjustment at the Menu M601.  
(Refer to Section 10-2-1.)
10. Perform the tracking adjustment. (Refer to Section 7-3.)
11. Perform the check after tracking adjustment.  
(Refer to Section 7-4.)
12. Perform the check of self-recording tape playback.  
(Refer to Section 7-5.)
13. Perform the switching position adjustment at Menu M605.  
(Refer to Section 7-6.)
14. Perform the AUTO EQ adjustment at the Menu M704.  
(Refer to Section 10-3.)



## 6-4. Replacement of S Reel Table Assembly

Reel table position: Standard cassette position

### Replacement Flowchart



### Removal

1. Remove the TR band assembly (part A side) shown in the figure.
2. Remove the sub reel gear (S) assembly. (Refer to Section 6-10.)
3. Remove the stopper washer shown in the figure, and remove the reel lock driving arm.

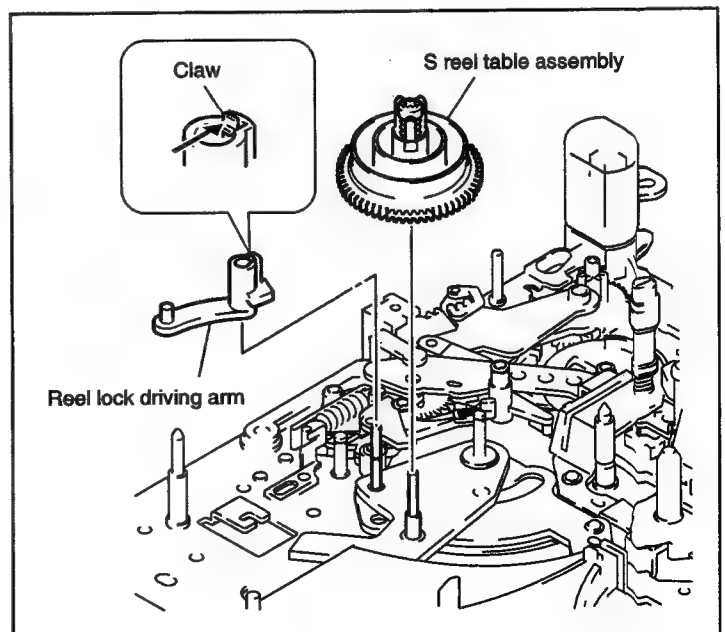
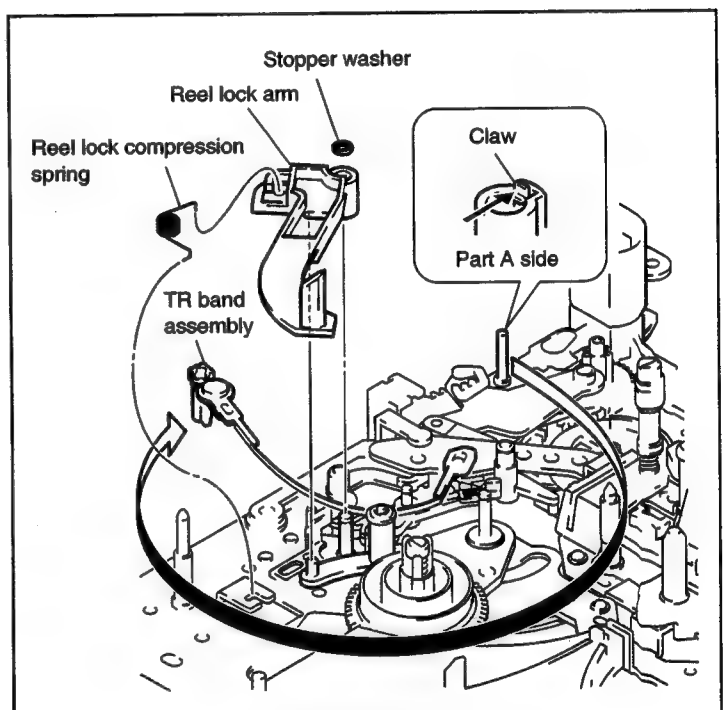
### Replacement/Attachment

4. Remove the S side reel table assembly, and replace with a new reel table assembly.
5. Attach the removed parts in the reverse order of steps 1 to 3.
6. Rotate the S reel table assembly with your hand, and check that it rotates smoothly.

### Check/Adjustment

7. Perform reel table assembly height check/adjustment. (Refer to Section 6-36.)
8. Perform reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
9. Perform TR arm assembly position check/adjustment. (Refer to Section 6-40.)
10. Perform FWD back tension check/adjustment. (Refer to Section 6-39.)

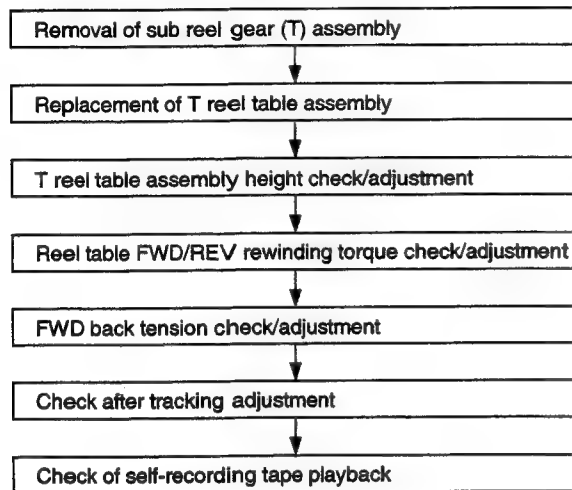
11. Perform the check after tracking adjustment. (Refer to Section 7-4.)
12. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



## 6-5. Replacement of T Reel Table Assembly

Reel table position: Standard cassette position

### Replacement Flowchart



### Removal

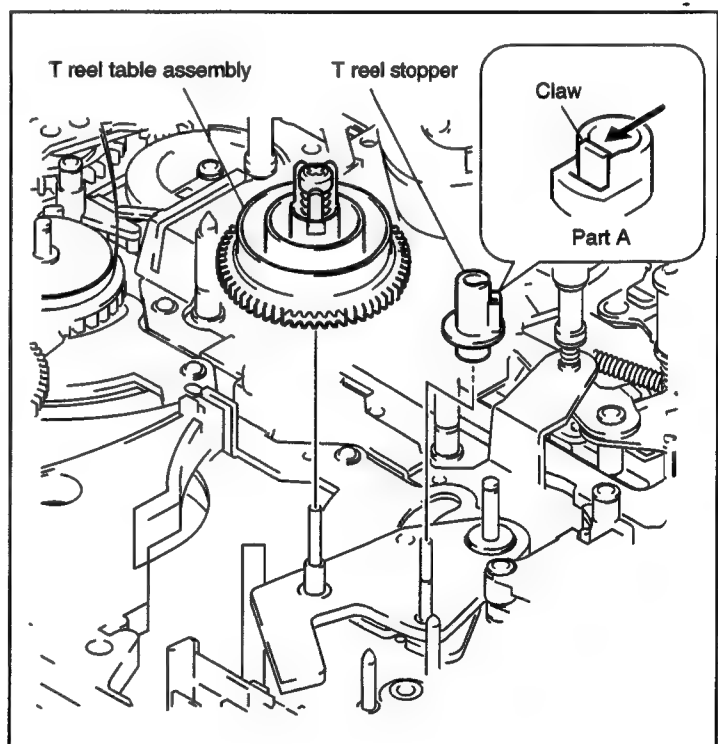
1. Remove the sub reel gear (T) assembly.  
(Refer to Section 6-11.)
2. While pressing the claw at part A shown in the figure in the arrow direction, remove the T reel stopper upwards.

### Replacement/Attachment

3. Remove the T reel table assembly, and replace with a new reel table assembly.
4. Attach the removed parts in the reverse order of steps 1 and 2.
5. Rotate the T reel table assembly with your hand, and check that it rotates smoothly.

### Check/Adjustment

6. Perform reel table assembly height check/adjustment. (Refer to Section 6-36.)
7. Perform reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
8. Perform FWD back tension check/adjustment. (Refer to Section 6-39.)
9. Perform the check after tracking adjustment. (Refer to Section 7-4.)
10. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



## 6-6. Replacement of Soft Brake Arm (S)

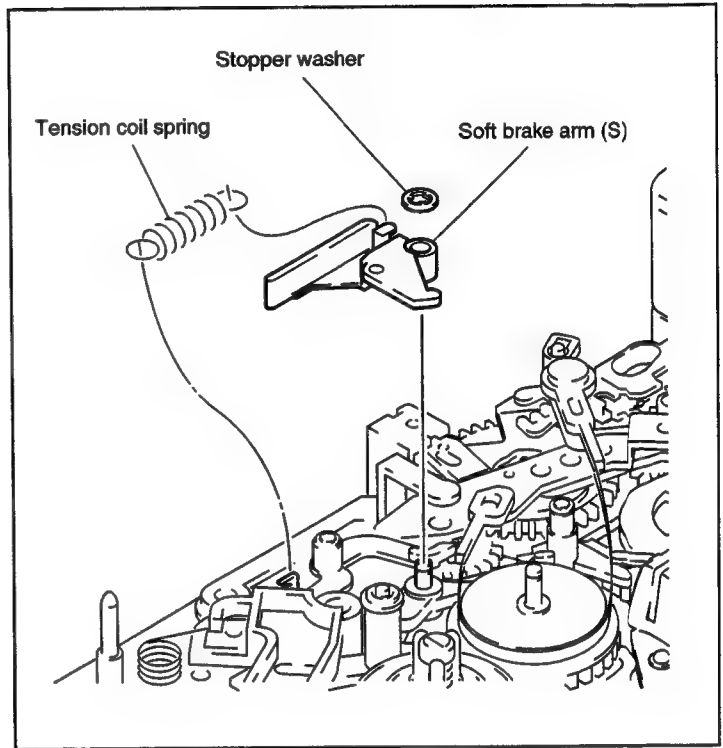
Mode: Unthreading end

### Removal

1. Remove the tension coil spring shown in the figure.
2. Remove the stopper washer, and remove the soft brake arm (S).

### Attachment

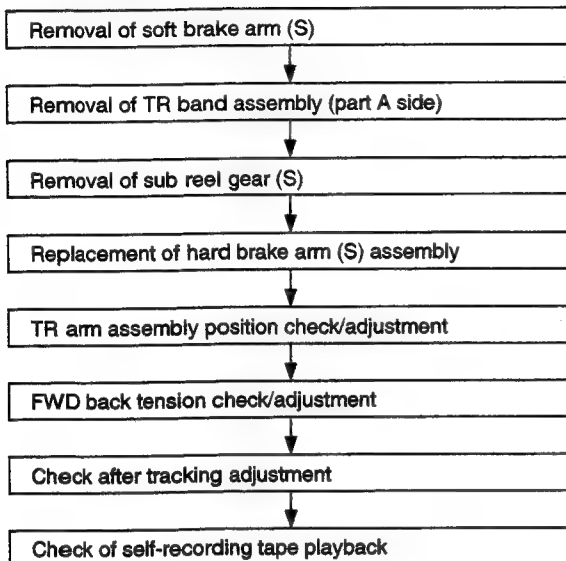
3. Attach a new soft brake arm (S) in the reverse order of step 2.
4. Attach the tension coil spring of step 1.



## 6-7. Replacement of Hard Brake Arm (S) Assembly

Mode: Unthreading end

### Replacement Flowchart



### Removal

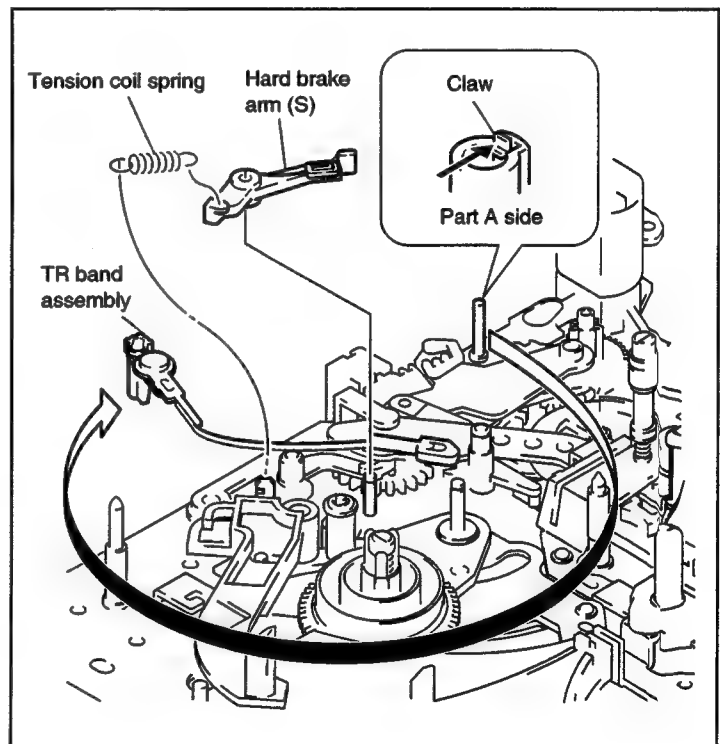
1. Remove the soft brake arm (S).  
(Refer to Section 6-6.)
2. Remove the TR band assembly (part A side).
3. Remove the sub reel gear (S) assembly.  
(Refer to Section 6-10.)
4. Remove the tension coil spring shown in the figure.
5. Remove the hard brake arm (S) assembly.

### Attachment

6. Attach a new hard brake arm (S) assembly.
7. Attach the removed parts in the reverse order of steps 1 to 4.

### Check/Adjustment

8. Perform TR arm assembly position check/adjustment. (Refer to Section 6-40.)
9. Perform FWD back tension check/adjustment. (Refer to Section 6-39.)
10. Perform the check after tracking adjustment. (Refer to Section 7-4.)
11. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



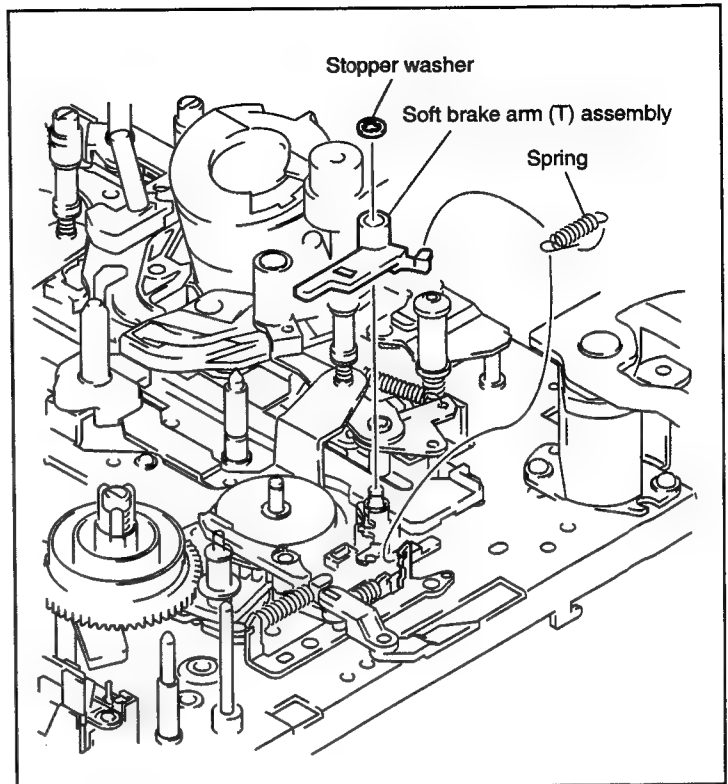
## 6-8. Replacement of Soft Brake (T) Assembly Components

### 6-8-1. Replacement of Soft Brake Arm (T) Assembly

Reel table position: Standard cassette position  
Mode: Unthreading end

#### Removal/Attachment

1. Remove the spring shown in the figure.
2. Remove the stopper washer and remove the soft brake arm (T) assembly.
3. Attach the soft brake arm (T) assembly in the reverse order of steps 1 and 2.

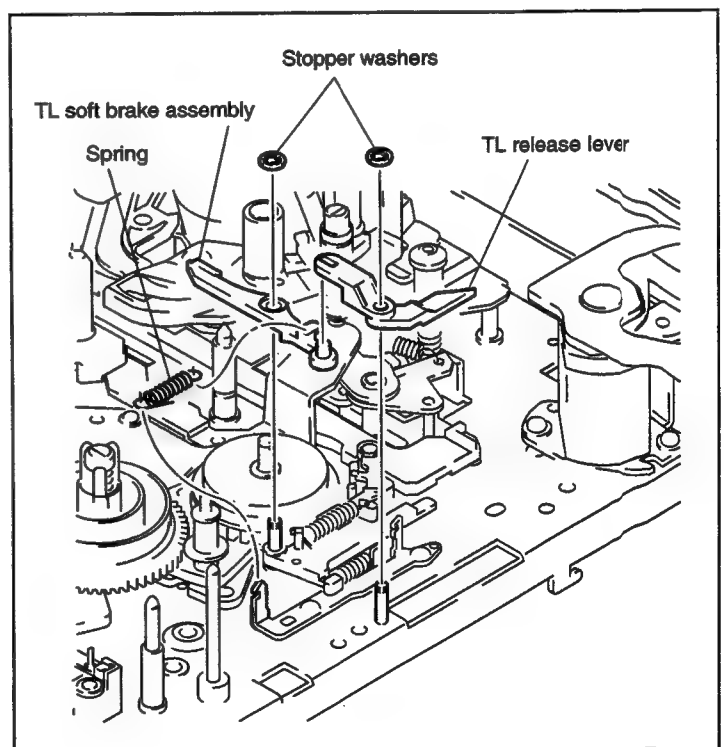


### 6-8-2. Replacement of TL Soft Brake Assembly

Reel table position: Standard cassette position  
Mode: Unthreading end

#### Removal/Attachment

1. Remove the spring shown in the figure.
2. Remove the two stopper washers and remove the TL release lever and TL soft brake assembly.
3. Attach the TL soft brake assembly in the reverse order of steps 1 and 2.

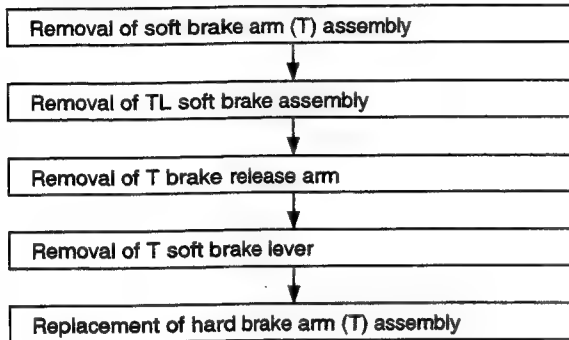




## 6-9. Replacement of Hard Brake Arm (T) Assembly

Mode: Unthreading end

### Replacement Flowchart

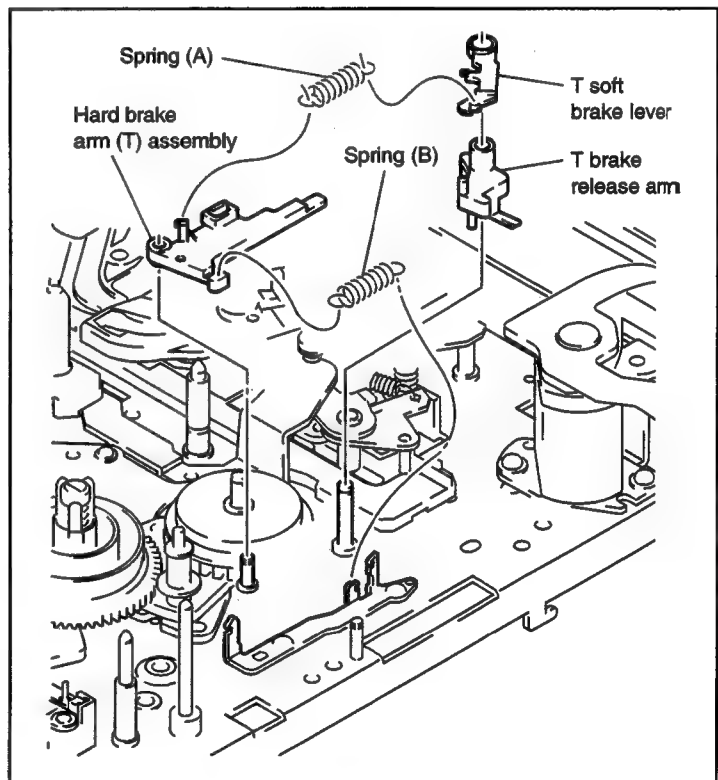


### Removal

1. Remove the soft brake arm (T) assembly.  
(Refer to Section 6-8-1.)
2. Remove the TL soft brake assembly.  
(Refer to Section 6-8-2.)
3. Remove spring (A) and then remove the T soft brake lever.
4. Remove the T brake release arm.
5. Remove the spring (B) shown in the figure, and remove the hard brake arm (T) assembly.

### Attachment

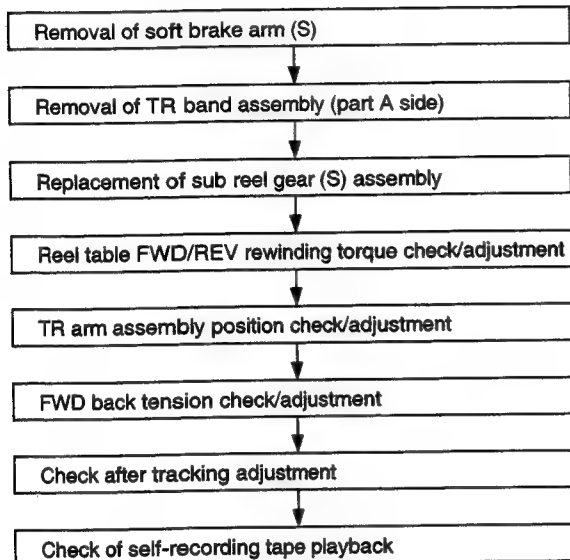
6. Attach a new hard brake arm (T) assembly.
7. Attach the removed parts in the reverse order of steps 1 to 4.



## 6-10. Replacement of Sub Reel Gear (S) Assembly

Reel table position: Standard cassette position  
Mode: Unthreading end

### Replacement Flowchart



### Removal

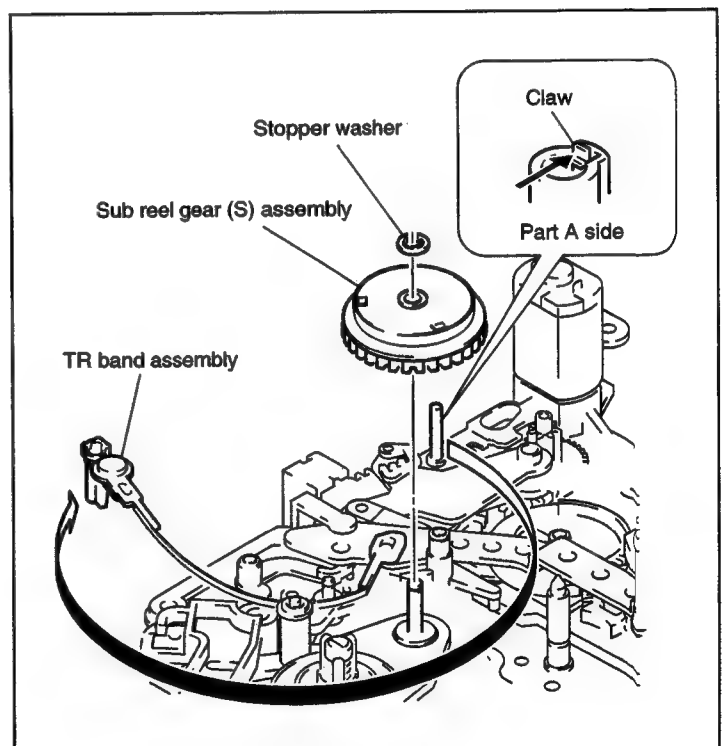
1. Remove the soft brake arm (S).  
(Refer to Section 6-6.)
2. Remove the TR band assembly (part A side).
3. Remove the stopper washer shown in the figure, and remove the sub reel gear (S) assembly.

### Attachment

4. Attach the new sub reel gear (S) assembly.
5. Attach the removed parts in the reverse order of steps 1 and 2.

### Check/Adjustment

6. Perform reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
7. Perform TR arm assembly position check/adjustment. (Refer to Section 6-40.)
8. Perform FWD back tension check/adjustment. (Refer to Section 6-39.)
9. Perform the check after tracking adjustment. (Refer to Section 7-4.)
10. Perform the check of self-recording tape playback. (Refer to Section 7-5.)

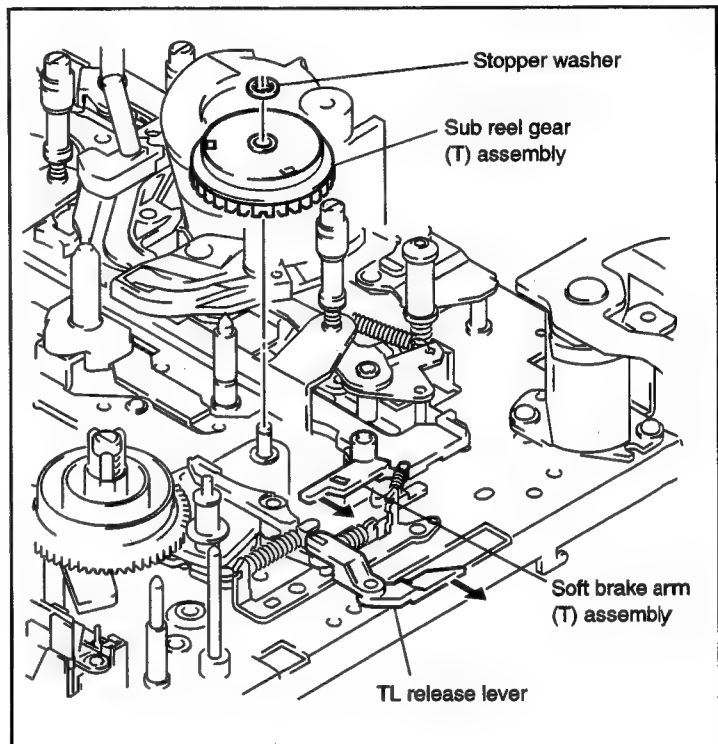


## 6-11. Replacement of Sub Reel Gear (T) Assembly

Mode: Unthreading end

### Removal/Attachment

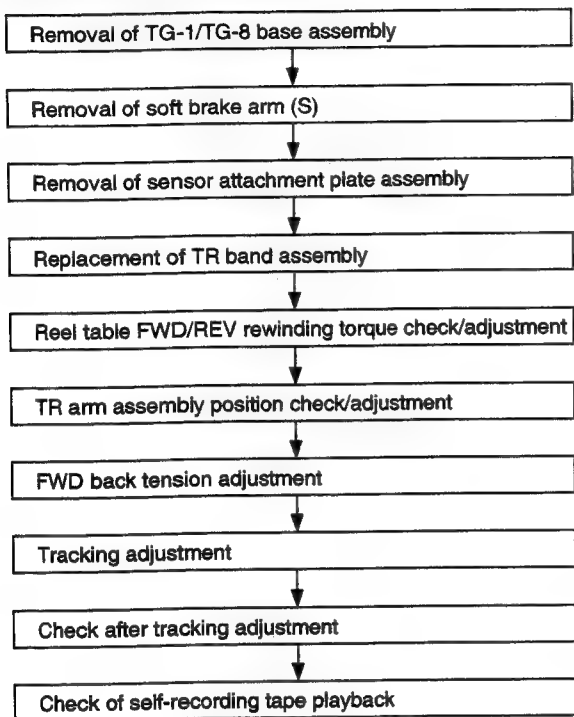
1. Move the soft brake arm (T) assembly and TL release lever shown in the figure in the arrow direction, and remove the stopper washer and sub reel gear (T) assembly.
2. Attach the sub reel gear (T) assembly in the reverse procedure of step 1.



## 6-12. Replacement of TR Band Assembly

Reel table position: Standard cassette position

### Replacement Flowchart



### Removal

1. Remove the TG-1/TG-8 base assembly. (Refer to Section 6-23.)
2. Set to the unthreading end, and remove the soft brake arm (S). (Refer to Section 6-6.)
3. Remove the sensor attachment plate assembly. (Refer to Section 6-15.)
4. Push part A of the TR band assembly shown in the figure in the arrow direction, and remove it upwards.
5. Set to the threading end, rotate part B of the TR band assembly in arrow direction (a), and remove it from the hole of part B.

### Attachment

#### Note

Do not touch the felt part of the TR band assembly.

6. Insert part B of the new TR band assembly in the hole, rotate it in (C) direction according to the reverse steps of 4 to hold, and wind it around the sub reel gear.
7. Set the TR band to the unthreading end without scratching it, and insert part A of the TR band assembly into the shaft until it locks.
8. Attach the soft brake arm (S), sensor attachment

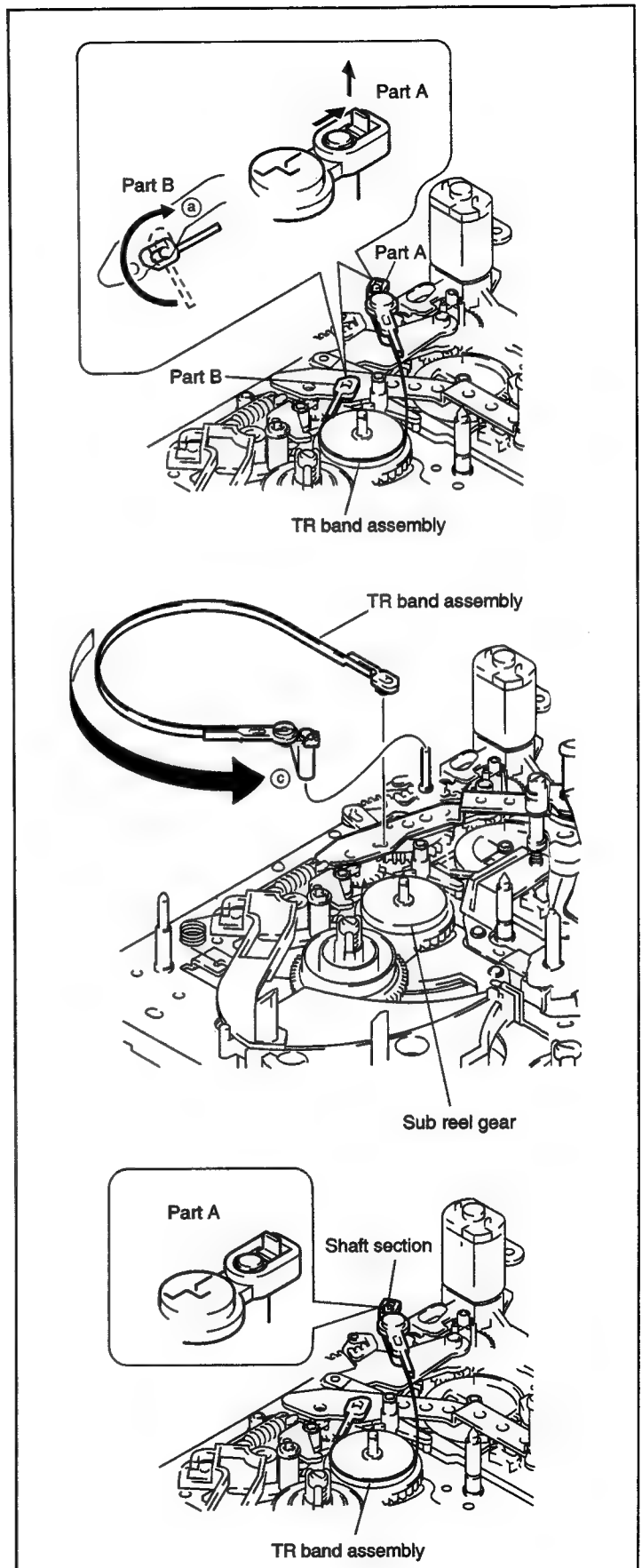


plate assembly and TG-1/TG-8 base assembly.

#### **Adjustment**

9. Perform the reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
10. Perform the TR arm assembly position check/adjustment. (Refer to Section 6-40.)
11. Perform the FWD back tension check/adjustment. (Refer to Section 6-39.)
12. Perform the tracking adjustment.  
(Refer to Section 7-3.)
13. Perform the check after tracking adjustment.  
(Refer to Section 7-4.)
14. Perform the check of self-recording tape playback. (Refer to Section 7-5.)

## 6-13. Replacement of Shift Motor Assembly

The shift motor assembly can be replaced with the cassette compartment attached.

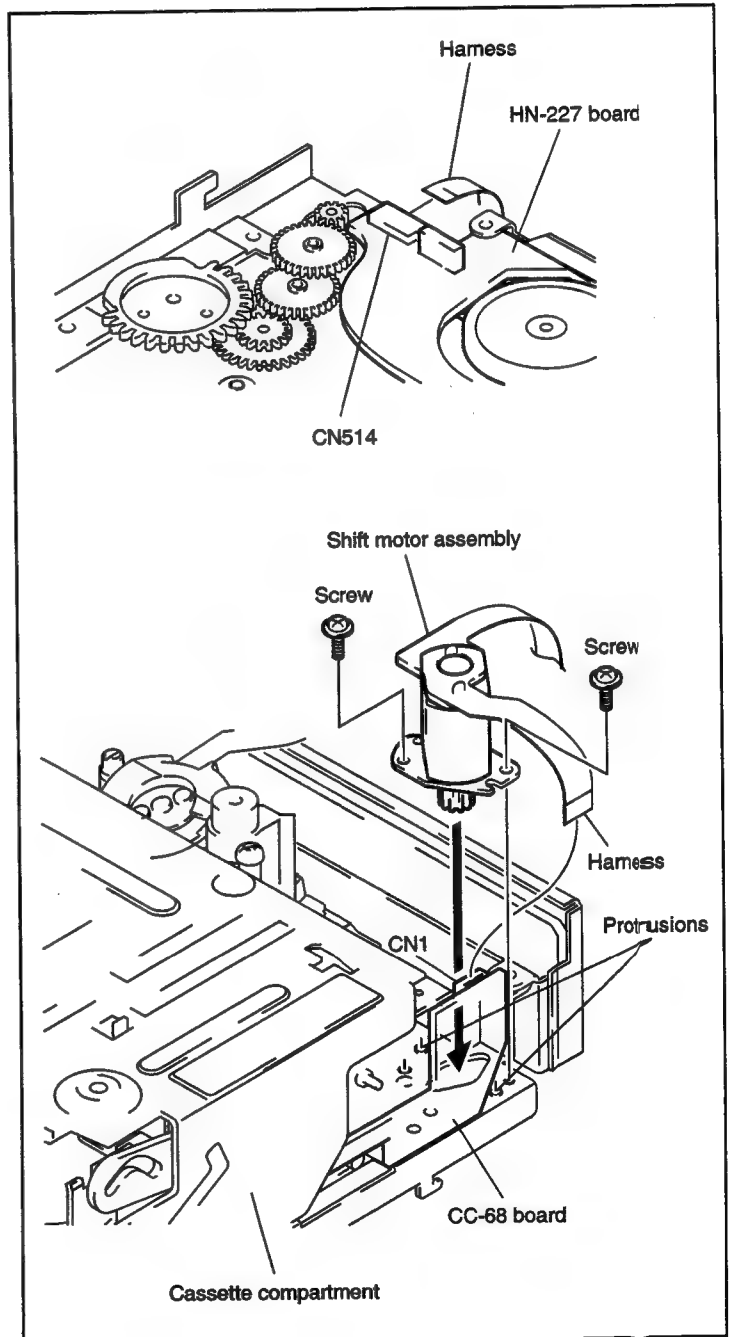
Mode: Unthreading end

### Removal

1. Remove the SV-213 board.  
(Refer to Section 2-9-8.)
2. Pull out the harness from the CN514 connector of the HN-227 board shown in the figure.
3. Pull out the harness from the CN1 connector of the CC-68 board shown in the figure.
4. Remove the two screws and remove the shift motor assembly.

### Attachment

5. Adjust the new shift motor to the two protrusions shown in the figure, and secure with the two screws.
6. Attach the harness and SV-213 board in the reverse order of steps 1 to 3.



## 6-14. Replacement of LD Motor Assembly

The components of the LD motor assembly include the worm shaft assembly. This Section explains the LD motor assembly and worm shaft assembly.

### Removal

1. Disconnect the connector (CN517) of the LD motor assembly shown in the figure.
2. Remove the two screws, and remove the LD motor assembly.
3. Remove the worm shaft assembly from the motor holder.
4. Attach the new worm shaft assembly to the motor holder so that the gears engage as shown in the figure.
5. Apply grease onto the worm shaft assembly.

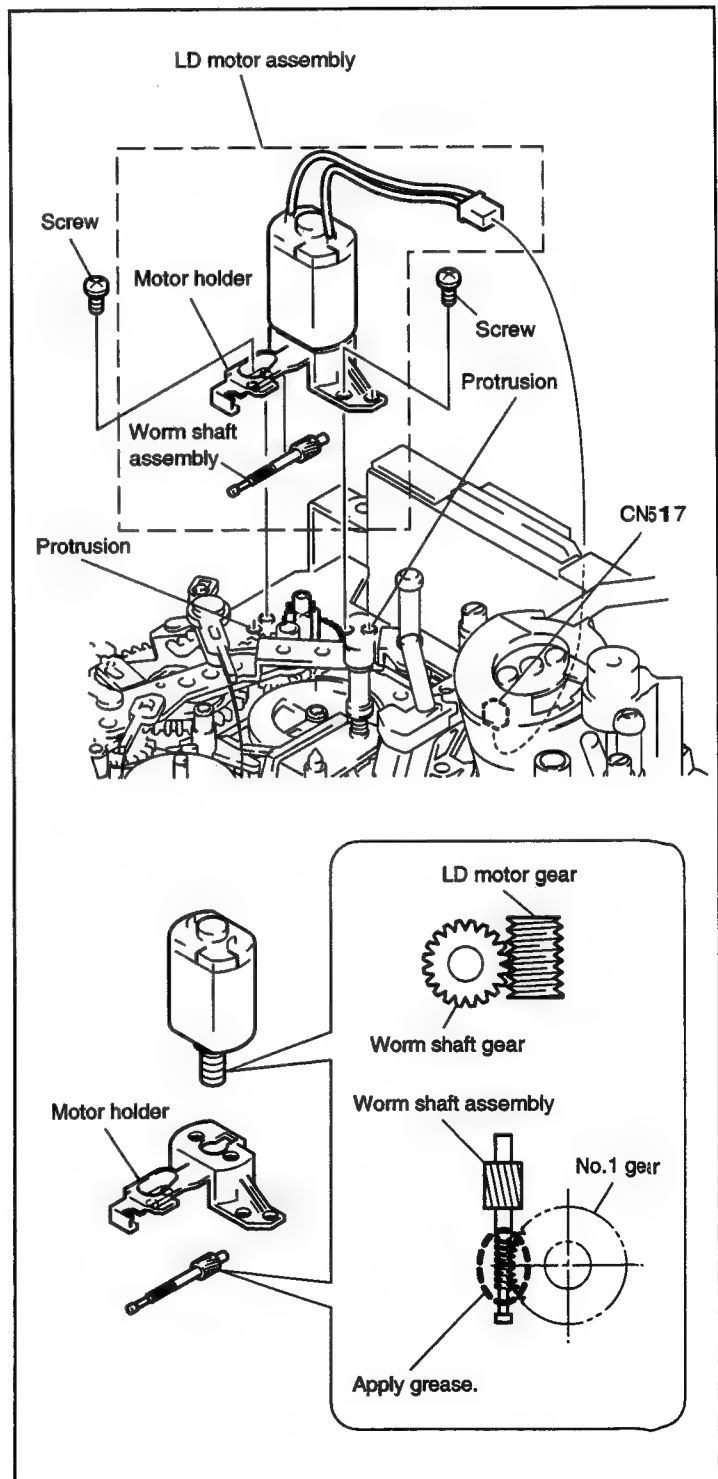
### Attachment

6. Attach the new LD motor assembly to the two protrusions shown in the figure, and secure with the two screws.

#### Note

After attaching, check to see that the worm shaft assembly and No. 1 gear are engaged as shown in the figure. If not, move No.1 gear up and down so that they are engaged correctly.

7. Insert the connector (CN517) of the LD motor assembly into the HN-227 board.



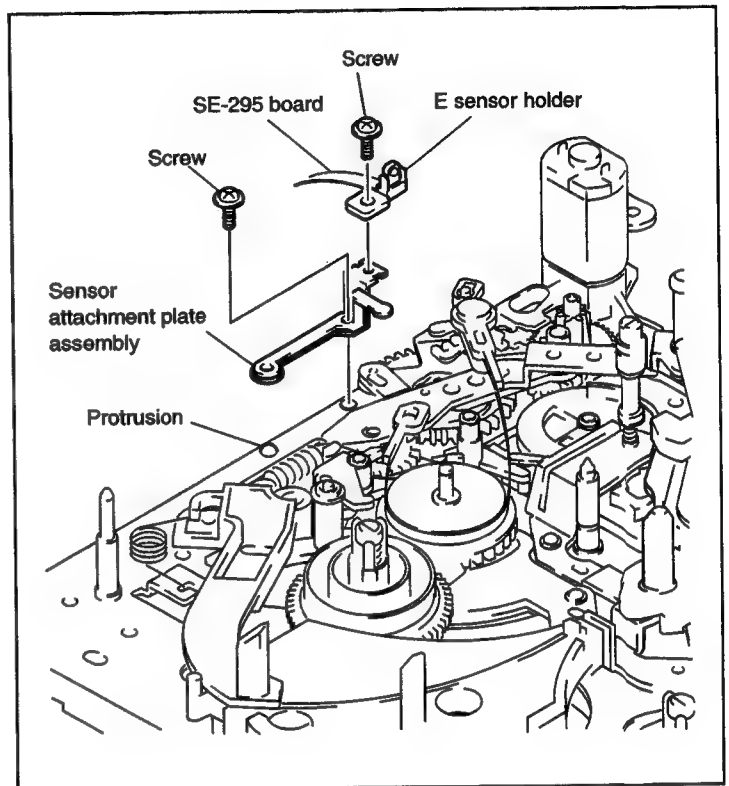
## 6-15. Replacement of Sensor Attachment Plate Assembly

### Removal

1. Remove one screw shown in the figure, and remove the E sensor holder of the SE-295 board.
2. Remove one screw and remove the sensor attachment plate assembly.

### Attachment

3. Adjust the new sensor attachment plate assembly to the protrusions as shown in figure, and secure with one screw.
4. Attach the E sensor holder in the reverse order of step 1.

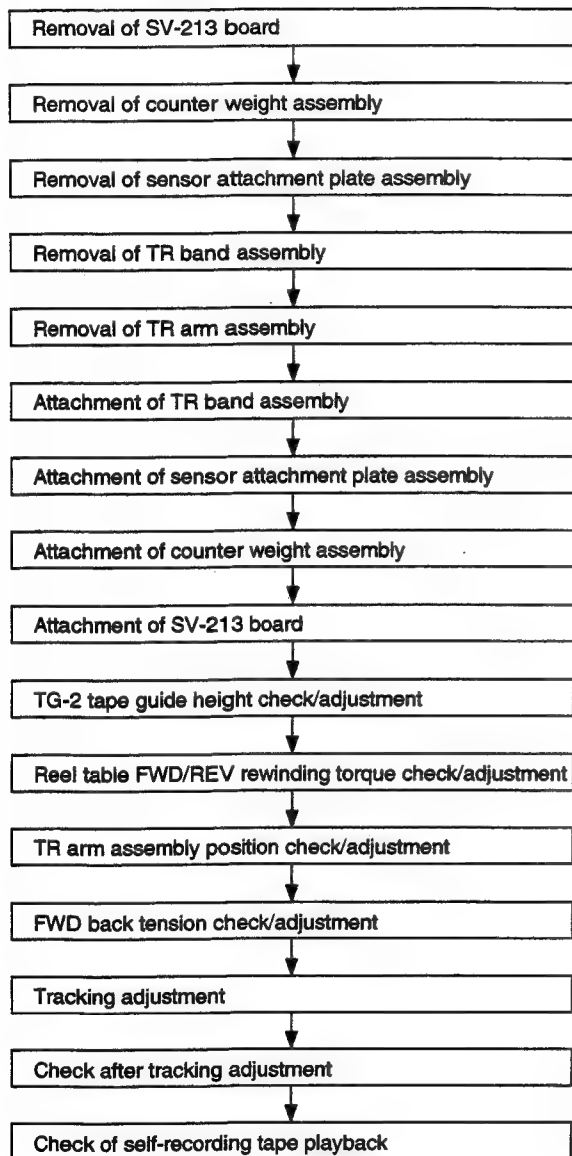




## 6-16. Replacement of TR Arm Assembly

Mode: Threading end

### Replacement flowchart



## Removal

1. Remove the SV-213 board.  
(Refer to Section 2-9-8.)
2. Remove the one screw shown in the figure, and remove the counter weight assembly.
3. Remove the sensor attachment plate assembly.  
(Refer to Section 6-15.)
4. Remove the TR band assembly.  
(Refer to Section 6-12.)
5. Remove the stopper washer of the TR arm assembly, and remove the cap holder.
6. Remove the TR arm assembly.

### Note

When removing the TR arm assembly, be sure to hold parts (a) and (b) horizontally, and then pull the TR arm assembly upwards vertically. Not pulling them vertically may cause the following defects.

- 1) Deformation of the crank arm and shaft of the TR arm assembly.
- 2) Scratches on the inside of the bearing of the shaft, and a replacement TR arm assembly can not be attached.

## Attachment

7. Insert Pin C of the TR arm assembly into the cam groove of the mode gear in the reverse order of steps 1 to 6, and insert the shaft into the bearing.

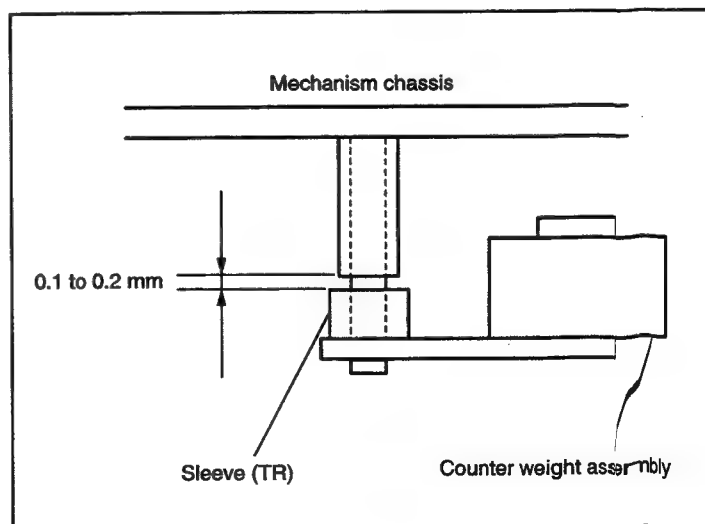
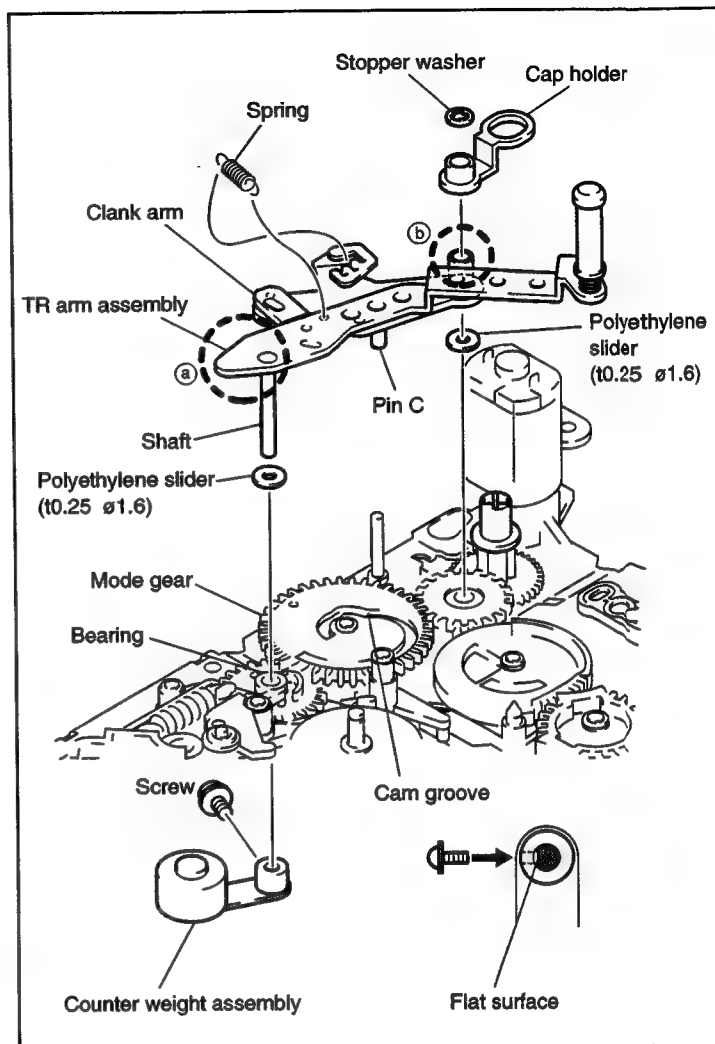
### Note

When attaching the counter weight assembly to the shaft of the TR arm assembly, take note of the following.

- 1) Tighten the attaching screw at the flat part of the shaft of the TR arm assembly.
  - 2) Attach so that there is a clearance of 0.1 to 0.2 mm from the sleeve (TR).
8. Attach the SV-213 board.  
(Refer to Section 2-9-8.)

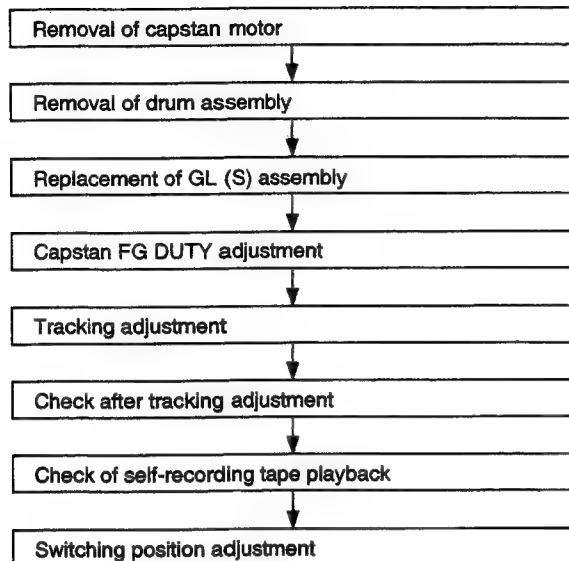
## Check/Adjustment

9. Perform TG-2 tape guide height check/adjustment. (Refer to Section 6-37.)
10. Perform the reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
11. Perform the TR arm assembly position check/adjustment. (Refer to Section 6-40.)
12. Perform FWD back tension check/adjustment. (Refer to Section 6-39.)
13. Perform the tracking adjustment. (Refer to Section 7-3.)
14. Perform the check after tracking adjustment. (Refer to Section 7-4.)
15. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



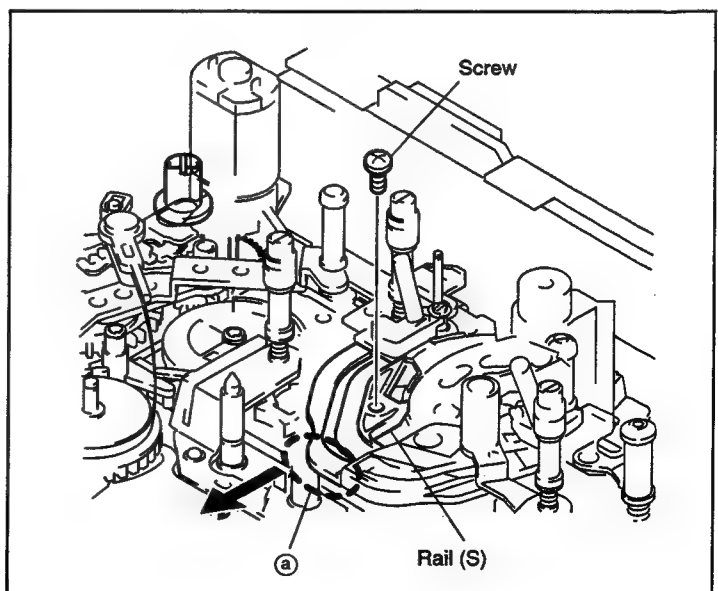
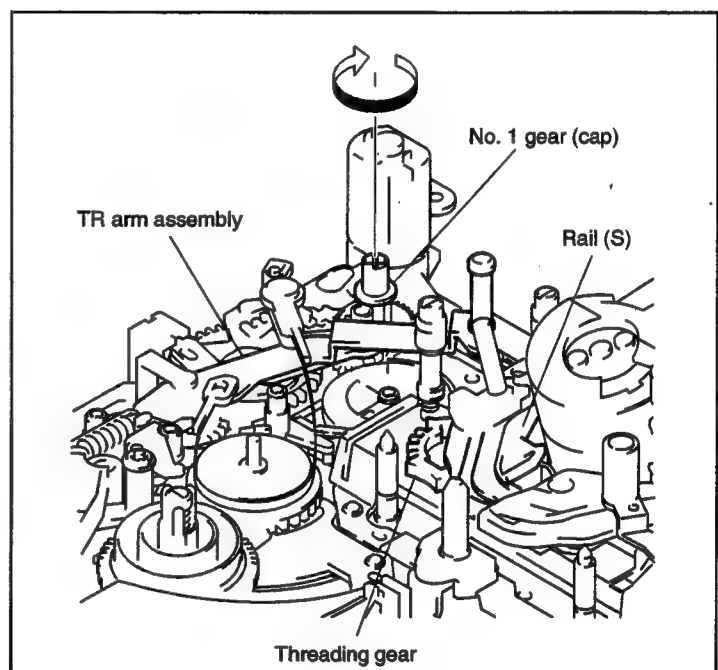
## 6-17. Replacement of GL (S) Assembly

### Replacement Flowchart

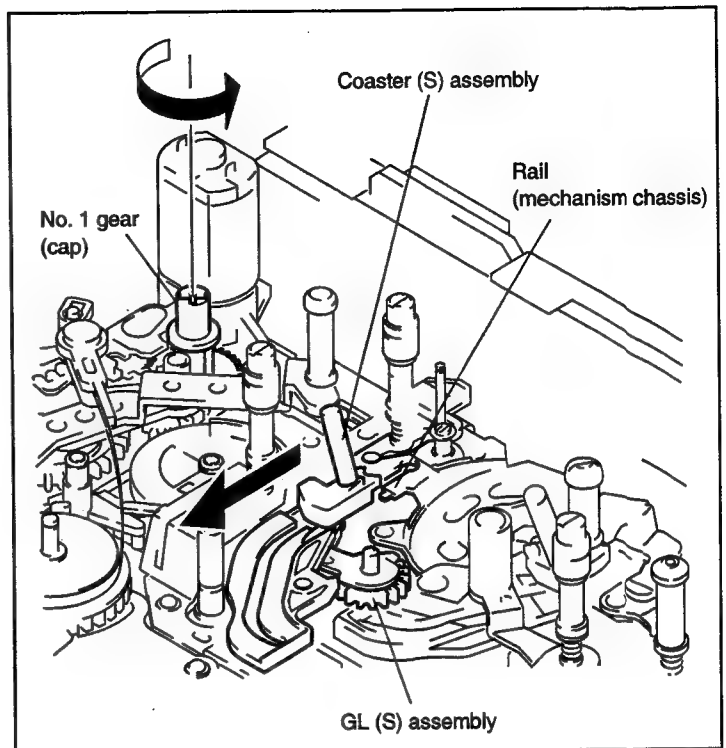


### Removal

1. Remove the capstan motor.  
(Refer to Section 6-28.)
2. Remove the drum assembly.  
(Refer to Section 6-3.)
3. Rotate the No.1 gear in the clockwise direction until the TR arm assembly separates from rail (S).
4. Remove the screw attaching rail (S), and remove it by holding the (a) part and sliding it in the arrow direction.

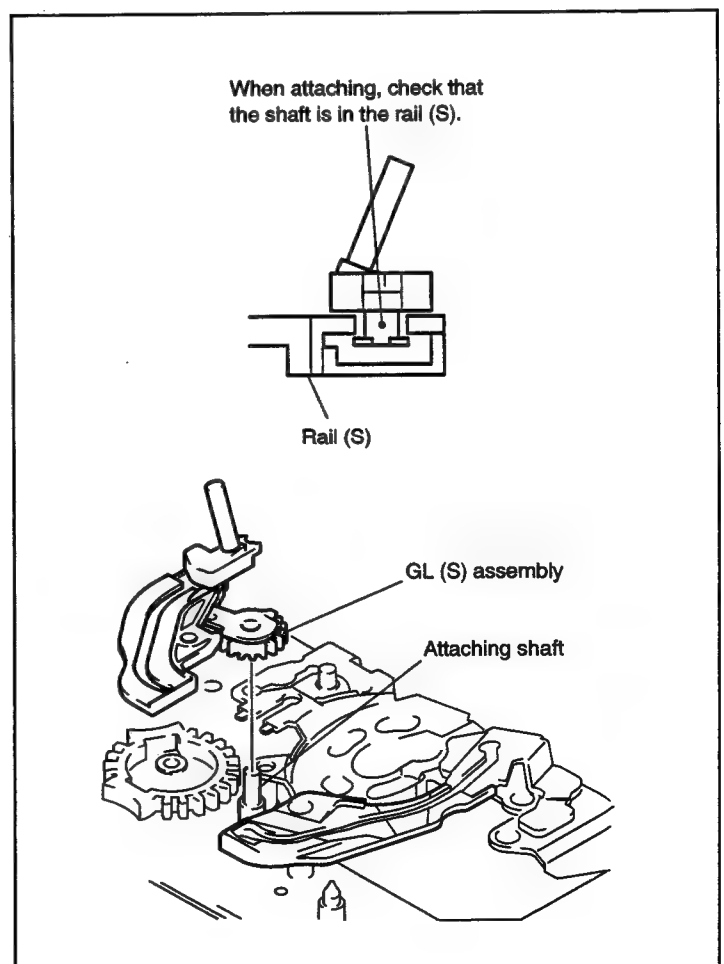


5. Rotate the No.1 gear in the counterclockwise direction, and remove the coaster (S) assembly and GL (S) assembly from the rail (mechanism chassis).



#### Attachment

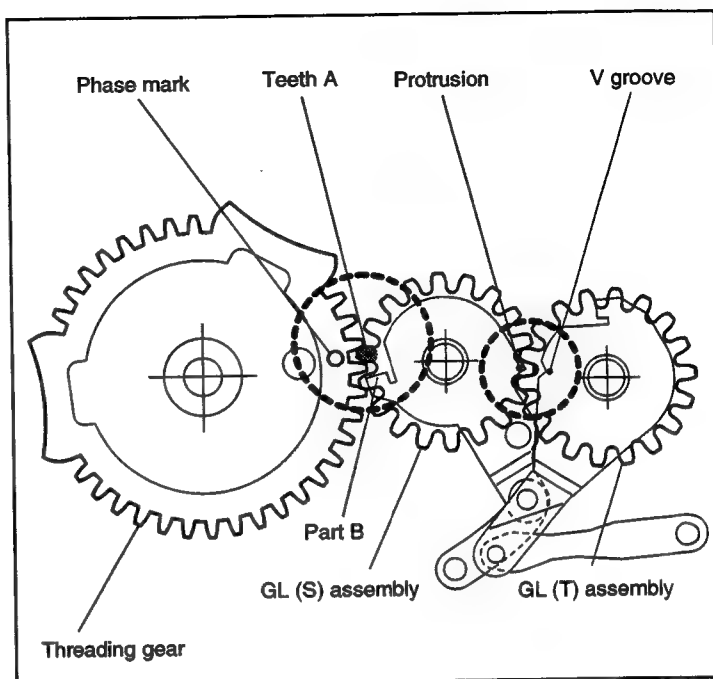
6. Attach the coaster (S) assembly to the groove of the rail (S), and then attach the GL (S) assembly.



7. Attach the GL (S) assembly to the attaching shaft.

**Note**

Adjust the protrusion of the GL (S) assembly to the V groove of the GL (T) assembly as shown in the figure, and attach the threading gear so that the phase mark of the threading gear and teeth A next to part B match.



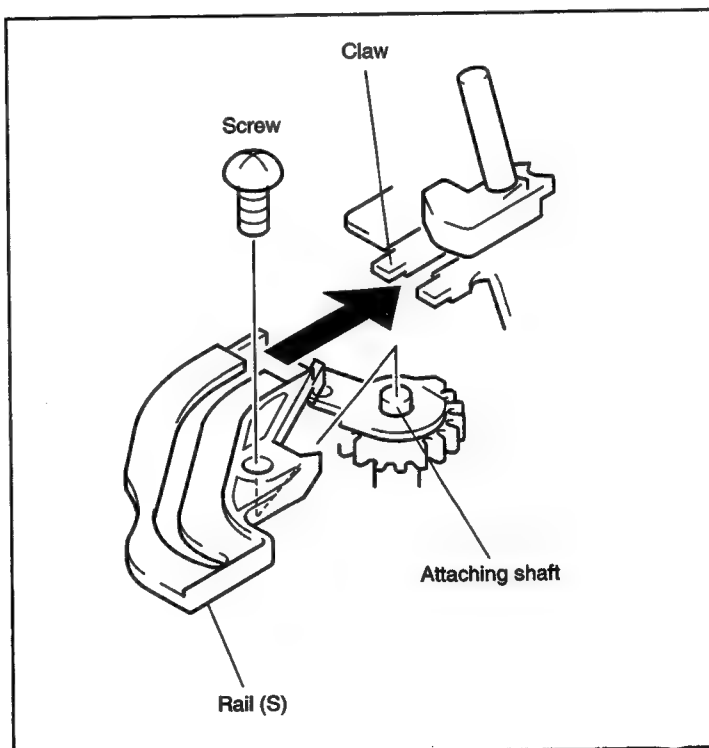
8. Attach rail (S) first from the claw and then the attaching shaft, and tighten the screw.

- Tightening torque: 0.0588 N·m (0.6 kg·cm)

9. Attach the capstan motor and drum assembly in the reverse order of steps 1 and 2.

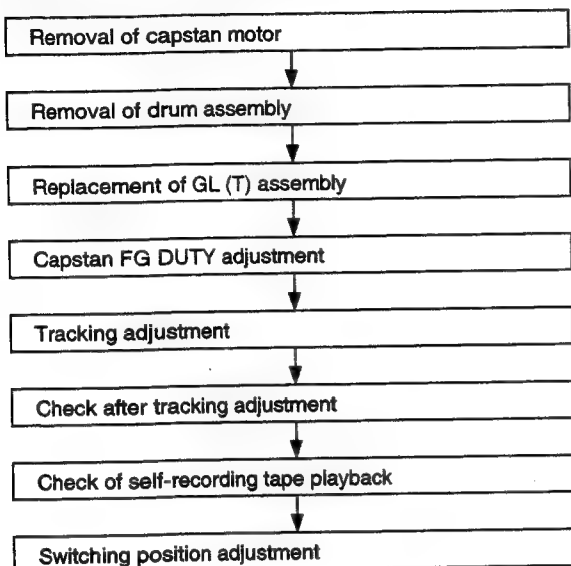
**Check/Adjustment**

10. Perform the capstan FG DUTY adjustment at Menu M601. (Refer to Section 10-2-1.)
11. Perform the tracking adjustment. (Refer to Section 7-3.)
12. Perform the check after tracking adjustment. (Refer to Section 7-4.)
13. Perform the check of self-recording tape playback. (Refer to Section 7-5.)
14. Perform the switching position adjustment at Menu M605. (Refer to Section 7-6.)



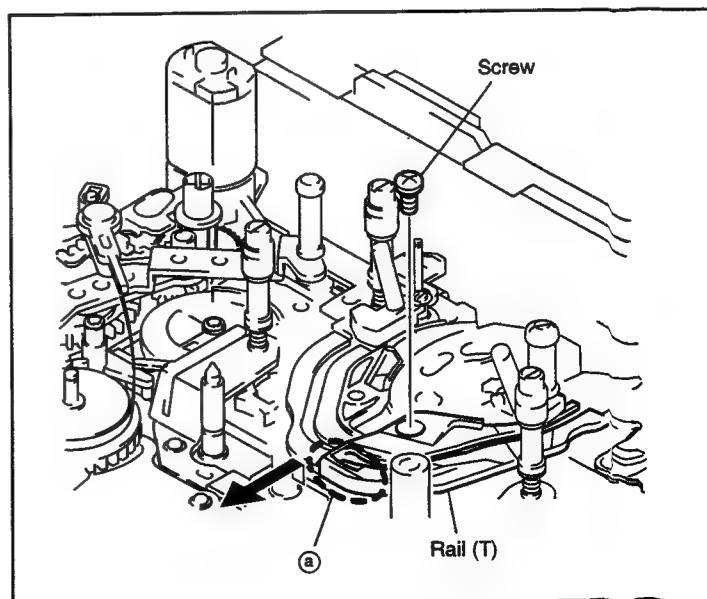
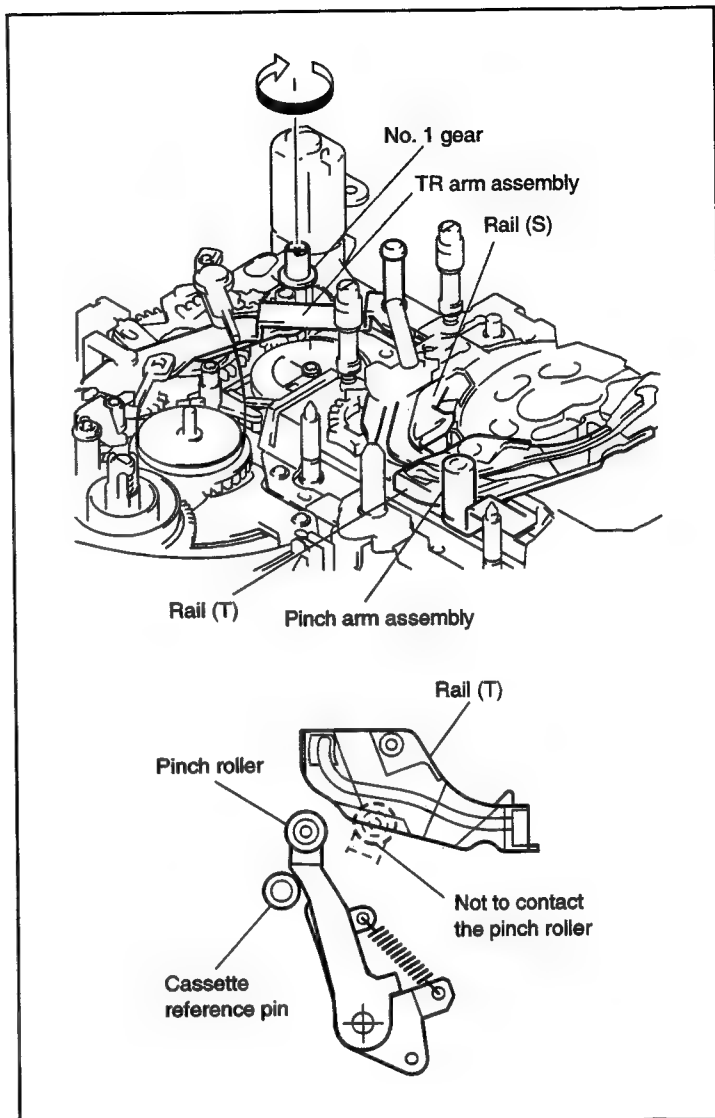
## 6-18. Replacement of GL (T) Assembly

### Replacement Flowchart

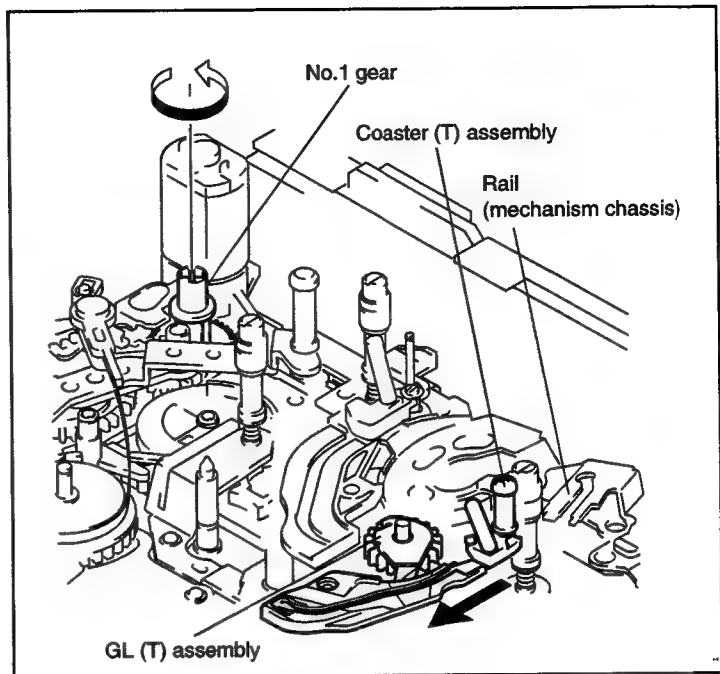


### Removal

1. Remove the capstan motor.  
(Refer to Section 6-28.)
2. Remove the drum assembly.  
(Refer to Section 6-3.)
3. Rotate the No.1 gear in the clockwise direction, and remove the TR arm assembly from rail (S). Make sure that the pinch roller is not in contact with rail (T).
4. Remove the screw attaching rail (T), lift up part (a) and slide it in the arrow direction and remove rail (T).

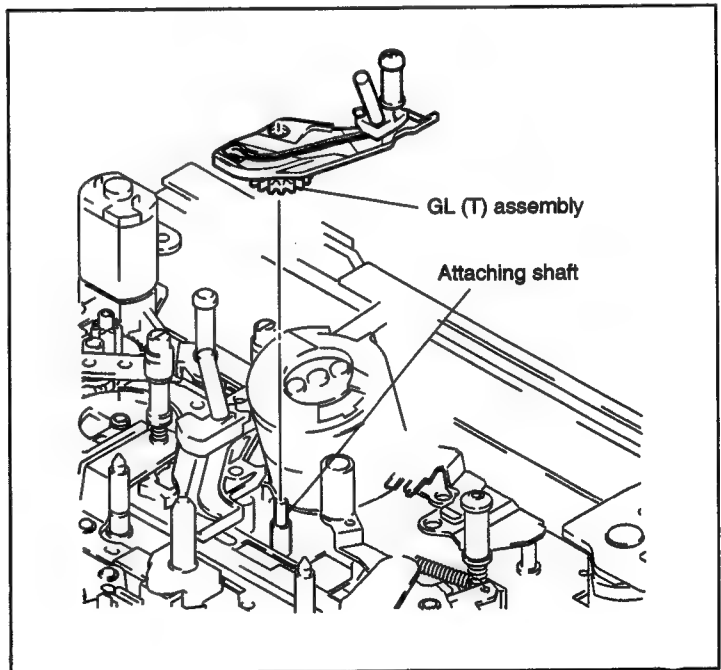


5. Rotate the No.1 gear in the counterclockwise direction, and remove the coaster (T) assembly and GL (T) assembly from the rail (mechanism chassis).



#### Attachment

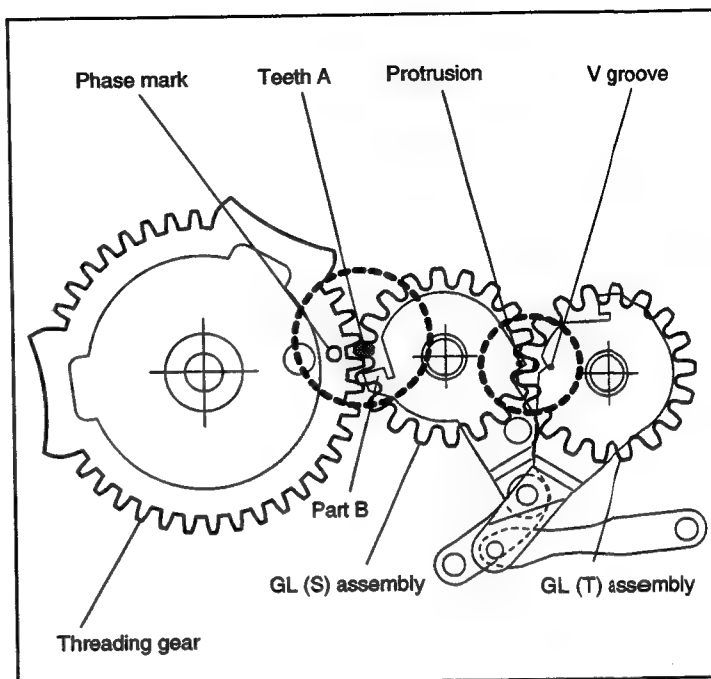
6. Attach the coaster (T) assembly to the groove of rail (T), and then attach the GL (T) assembly.



7. Attach the GL (T) assembly to the attaching shaft.

**Note**

Adjust the protrusion of the GL (S) assembly to the V groove of the GL (T) assembly as shown in the figure, and attach the threading gear so that the phase mark of the threading gear and teeth A next to part B match.



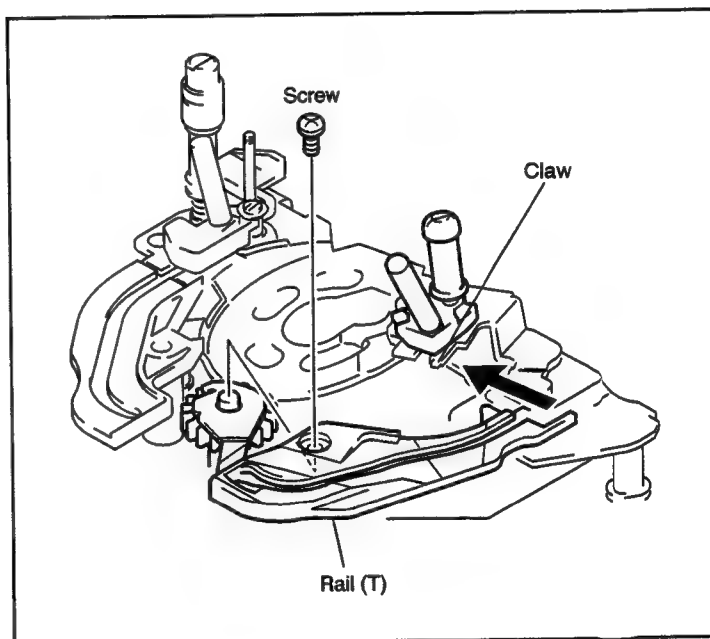
8. Attach rail (T) first from the claw and then the attaching shaft, and tighten the screw.

- Tightening torque: 0.0588 N•m (0.6 kg•cm)

9. Attach the capstan motor and drum assembly in the reverse order of steps 1 and 2.

**Check/Adjustment**

10. Perform the capstan FG DUTY adjustment at Menu M601. (Refer to Section 10-2-1.)
11. Perform the tracking adjustment. (Refer to Section 7-3.)
12. Perform the check after tracking adjustment. (Refer to Section 7-4.)
13. Perform the check of self-recording tape playback. (Refer to Section 7-5.)
14. Perform the switching position adjustment at Menu M605. (Refer to Section 7-6.)

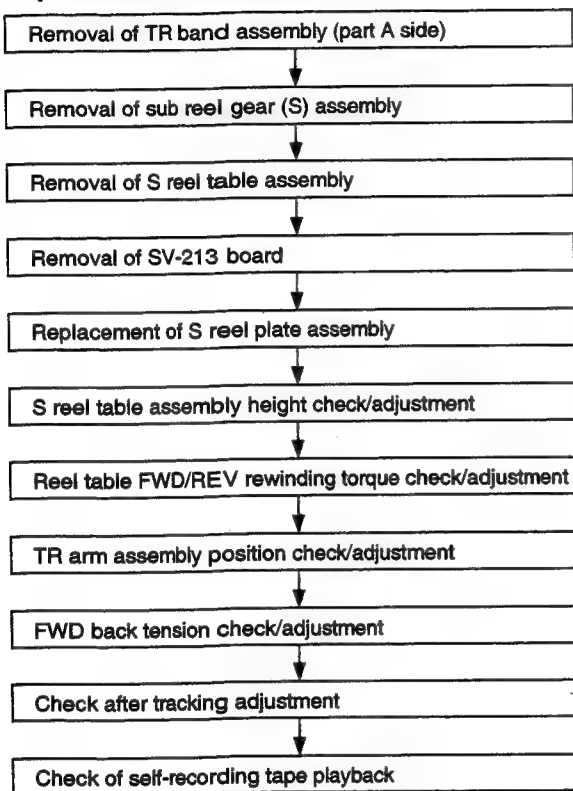




## 6-19. Replacement of S Reel Plate Assembly

Reel table position: Standard cassette position

### Replacement Flowchart



### Removal

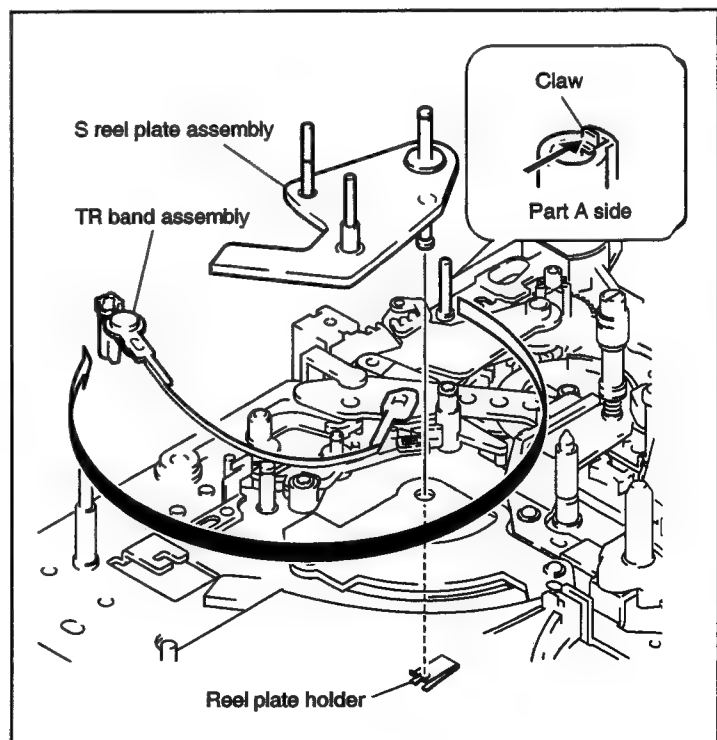
1. Remove the TR band assembly (part A side).
2. Remove the sub reel gear (S) assembly.  
(Refer to Section 6-10.)
3. Remove the S reel table assembly.  
(Refer to Section 6-4.)
4. Remove the SV-213 board.  
(Refer to Section 2-9-8.)
5. Remove the reel plate holder shown in the figure, and remove the S reel plate assembly.

### Attachment

6. Attach the new S reel plate assembly in the reverse order of step 5.
7. Attach the parts removed in the reverse order of steps 1 to 4.

### Check/Adjustment

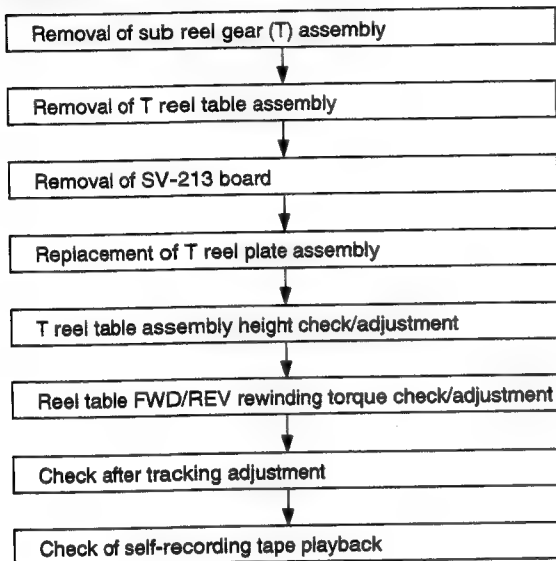
8. Perform S reel table height check/adjustment.  
(Refer to Section 6-36.)
9. Perform the reel table assembly FWD/REV rewinding torque check/adjustment.  
(Refer to Section 6-38.)
10. Perform TR arm assembly position check/adjustment.  
(Refer to Section 6-40.)
11. Perform the FWD back tension check/adjustment.  
(Refer to Section 6-39.)
12. Perform the check after tracking adjustment.  
(Refer to Section 7-4.)
13. Perform the check of self-recording tape playback.  
(Refer to Section 7-5.)



## 6-20. Replacement of T Reel Plate Assembly

Reel table position: Standard cassette position

### Replacement Flowchart



### Removal

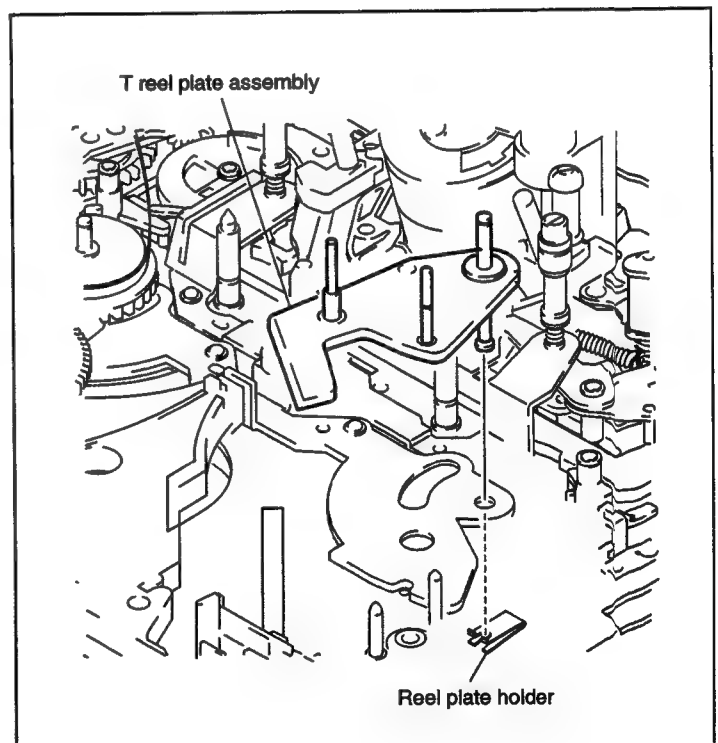
1. Remove the sub reel gear (T) assembly.  
(Refer to Section 6-11.)
2. Remove the T reel table assembly.  
(Refer to Section 6-5.)
3. Remove the SV-213 board.  
(Refer to Section 2-9-8.)
4. Remove the reel plate holder shown in the figure, and remove the T reel plate assembly.

### Attachment

5. Attach the new T reel plate assembly in the reverse order of step 4.
6. Attach the parts removed in the reverse order of steps 1 to 3.

### Check/Adjustment

7. Perform T reel table assembly height check/adjustment. (Refer to Section 6-36.)
8. Perform the reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
9. Perform the check after tracking adjustment. (Refer to Section 7-4.)
10. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



## 6-21. Replacement of C Assembly

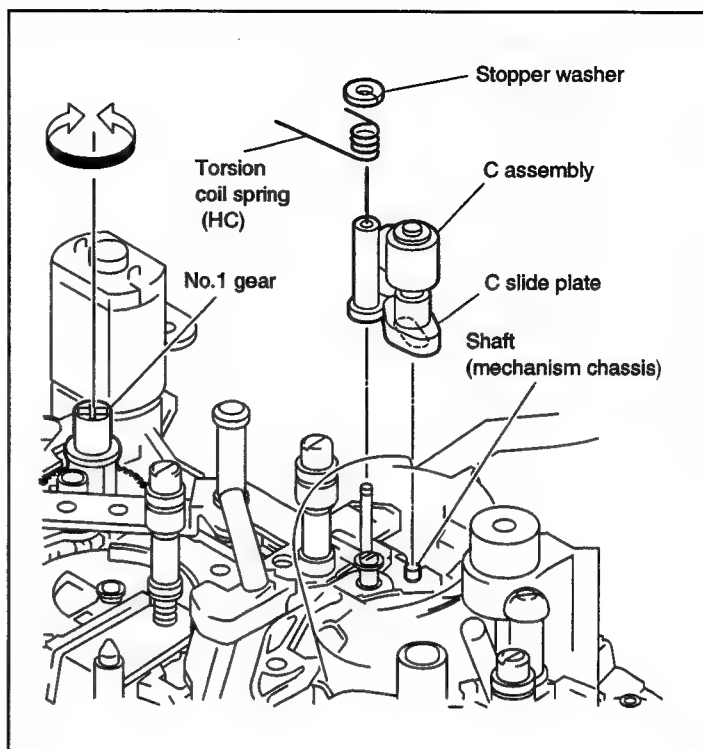
### Removal/Attachment

1. Remove the stopper washer shown in the figure, and remove the C assembly and torsion coil spring (HC).
2. Attach the new C assembly and torsion coil spring (HC) with the stopper washer.

#### Note

When attaching, check that the shaft of the mechanism chassis is inserted into the long hole of the C slide plate.

3. Rotate the No.1 gear, and check that the C assembly moves to the left and right.



## 6-22. Replacement of Pinch Arm Assembly

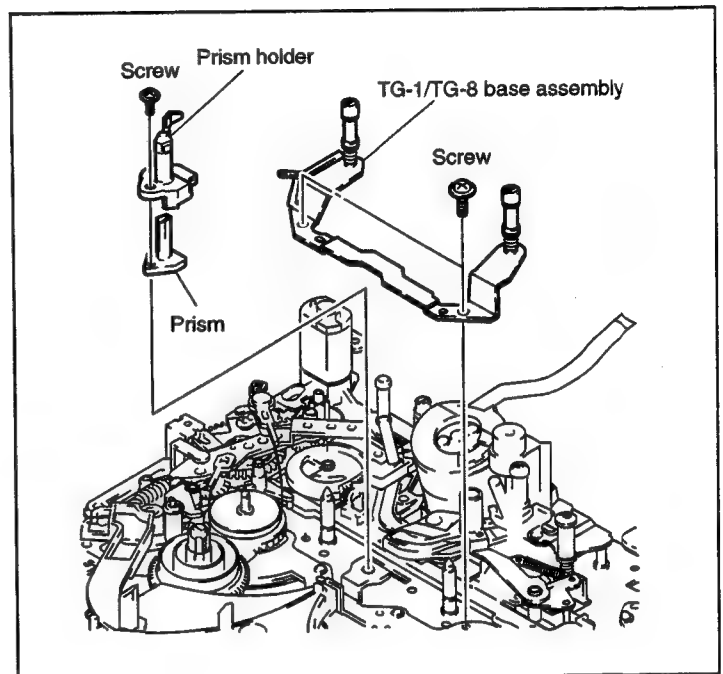
Reel table position: Standard cassette position  
Mode: Unthreading end

### Removal

1. Remove one screw shown in the figure, and remove the prism holder and prism.
2. Check that the S reel table and T reel table are at the standard cassette position, and remove the two screws shown in the figure, and remove the TG-1/TG-8 base assembly.

#### Note

When removing the TG-1/TG-8 base assembly, hold the base instead of the guide.



3. Remove the stopper washer, and remove the pinch arm assembly and torsion coil spring (pinch).

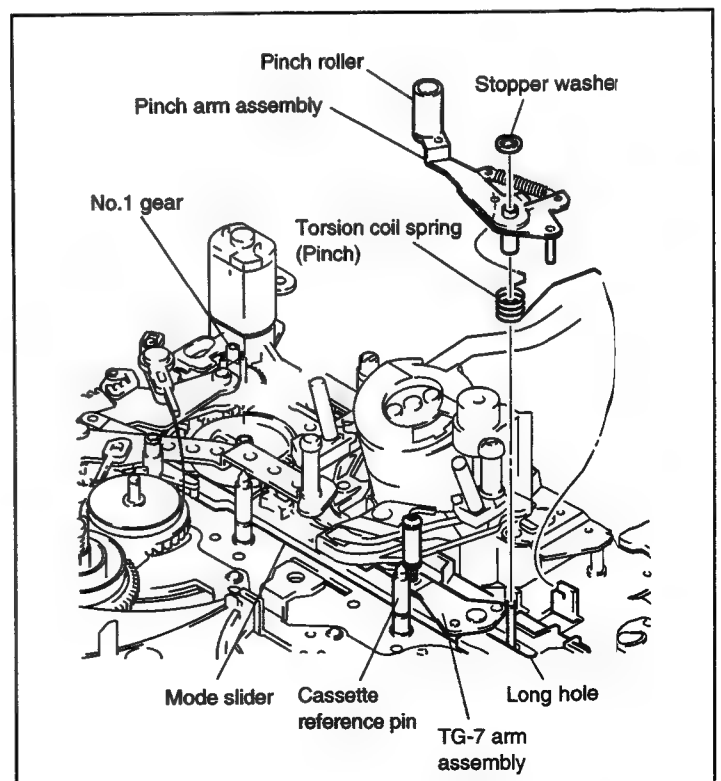
### Attachment

4. Set the new pinch arm assembly between the cassette reference pin and TG-7 arm assembly, and attach it to the unit with the torsion coil spring (pinch) using the stopper washer.

#### Note

When attaching, never touch the pinch roller.

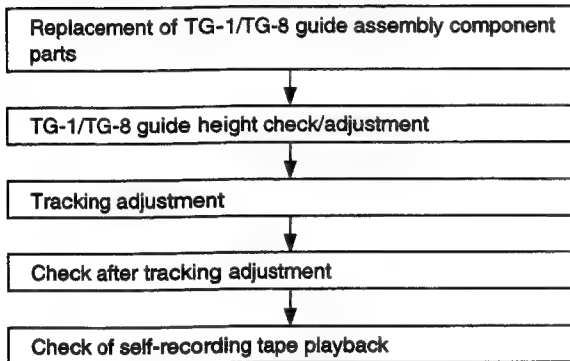
5. Attach the parts removed in the reverse order of steps 1 to 3.
6. Rotate the No.1 gear in the clockwise and counterclockwise direction, and check that the pinch arm moves smoothly.
7. Perform TG-1/TG-8 tape guide height check/adjustment. (Refer to Section 6-37.)
8. Perform the check after tracking adjustment. (Refer to Section 7-4.)
9. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



## 6-23. Replacement of TG-1/TG-8 Guide Assembly Component Parts

The TG-1 guide assembly and TG-8 guide assembly component parts can be replaced in the same way. This Section explains how to replace the TG-1 guide assembly component parts.

### Replacement Flowchart



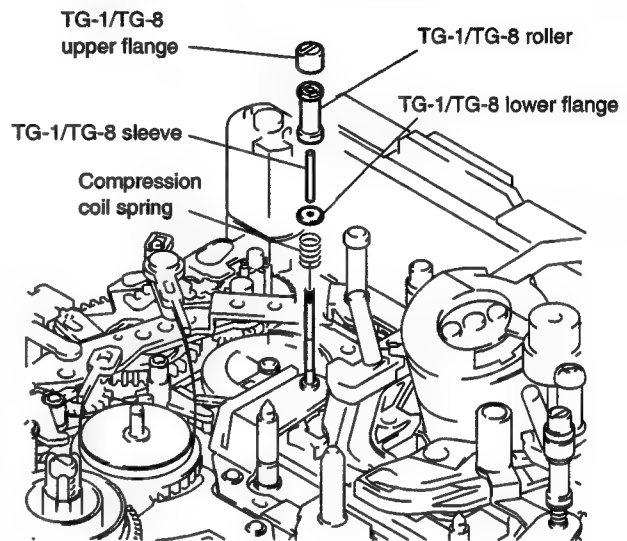
### Removal/Attachment

1. Rotate the guide upper flange shown in the figure in the counterclockwise direction, and remove the TG-1 guide assembly component parts.
2. Replace the required parts, and attach the component parts in the reverse order of step 1.
3. Perform TG-1 guide height check / adjustment. (Refer to Section 6-37.)

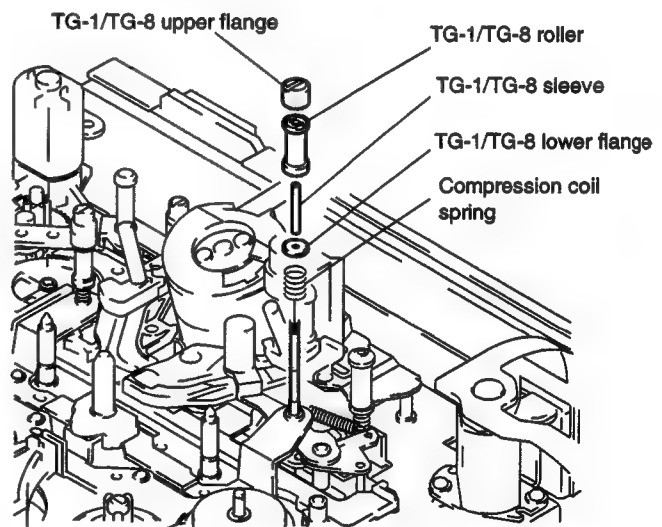
### Check/Adjustment

4. Perform the tracking adjustment. (Refer to Section 7-3.)
5. Perform the check after tracking adjustment. (Refer to Section 7-4.)
6. Perform the check of self-recording tape playback. (Refer to Section 7-5.)

### TG-1 guide assembly component parts

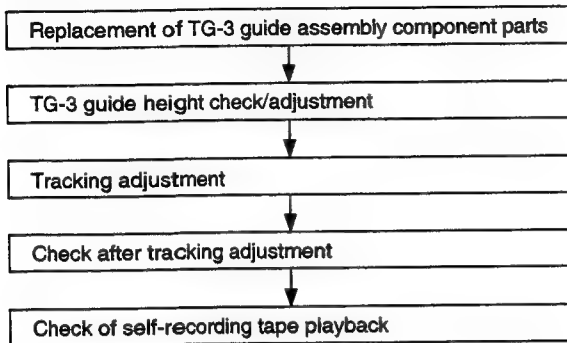


### TG-8 guide assembly component parts



## 6-24. Replacement of TG-3 Guide Assembly Component Parts

### Replacement Flowchart

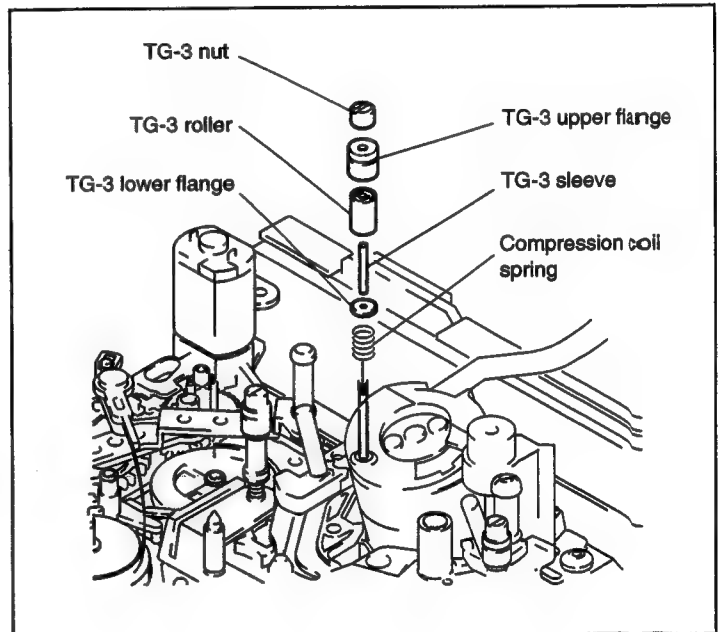


### Removal/Attachment

1. Rotate the guide upper flange shown in the figure in the counterclockwise direction, and remove the TG-3 guide assembly component parts.
2. Replace the required parts, and attach the component parts in the reverse order of step 1.

### Check/Adjustment

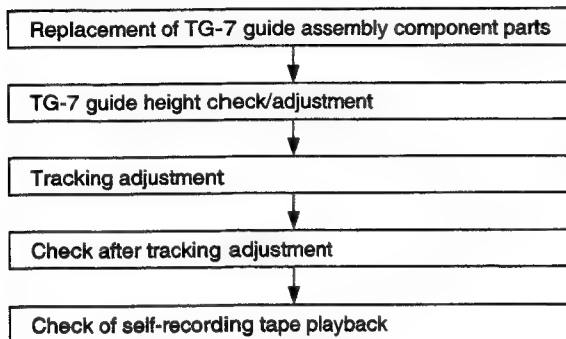
3. Perform TG-3 guide height check adjustment. (Refer to Section 6-37.)
4. Perform the tracking adjustment. (Refer to Section 7-3.)
5. Perform the check after tracking adjustment. (Refer to Section 7-4.)
6. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



## 6-25. Replacement of TG-7 Guide Assembly Component Parts

Mode: Threading end

### Replacement Flowchart

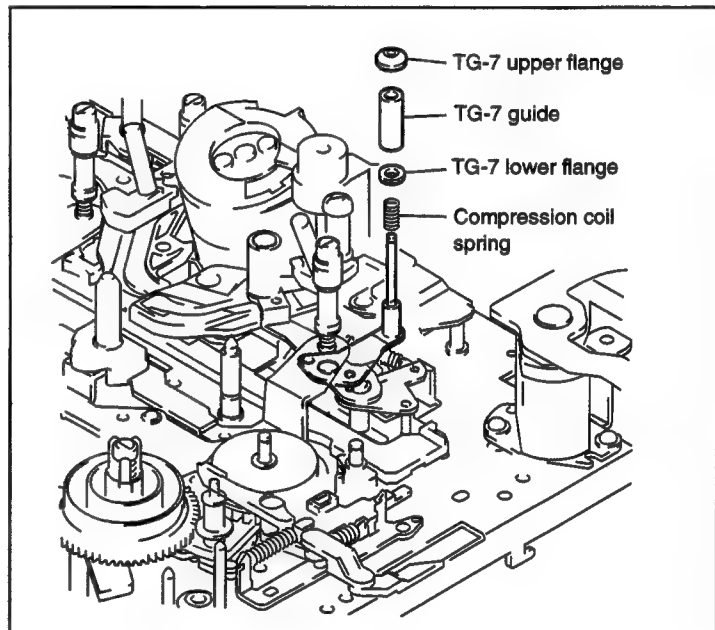


### Removal/Attachment

1. Rotate the TG-7 upper flange shown in the figure in the counterclockwise direction, and remove the TG-7 guide assembly component parts.
2. Replace the required parts, and attach the component parts in the reverse order of step 1.

### Check/Adjustment

3. Perform TG-7 guide height check/adjustment. (Refer to Section 6-37.)
4. Perform the tracking adjustment. (Refer to Section 7-3.)
5. Perform the check after tracking adjustment. (Refer to Section 7-4.)
6. Perform the check of self-recording tape playback. (Refer to Section 7-5.)

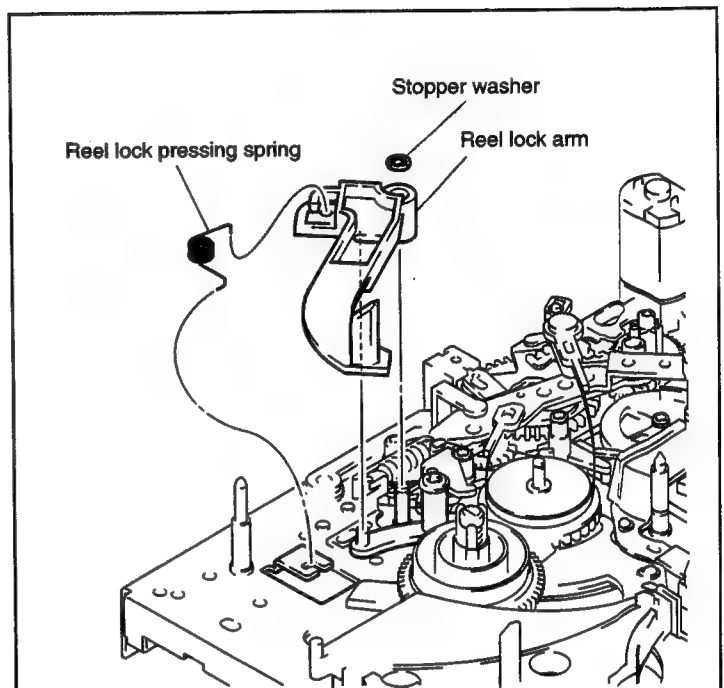


## 6-26. Replacement of Idler Gear Assembly

Reel table position: Standard cassette position  
Mode: Threading end

### Removal

1. Remove the reel lock pressing spring and stopper washer shown in the figure, and remove the reel lock arm.



2. While pushing in the two claws in the arrow direction, remove the reel lock cover.

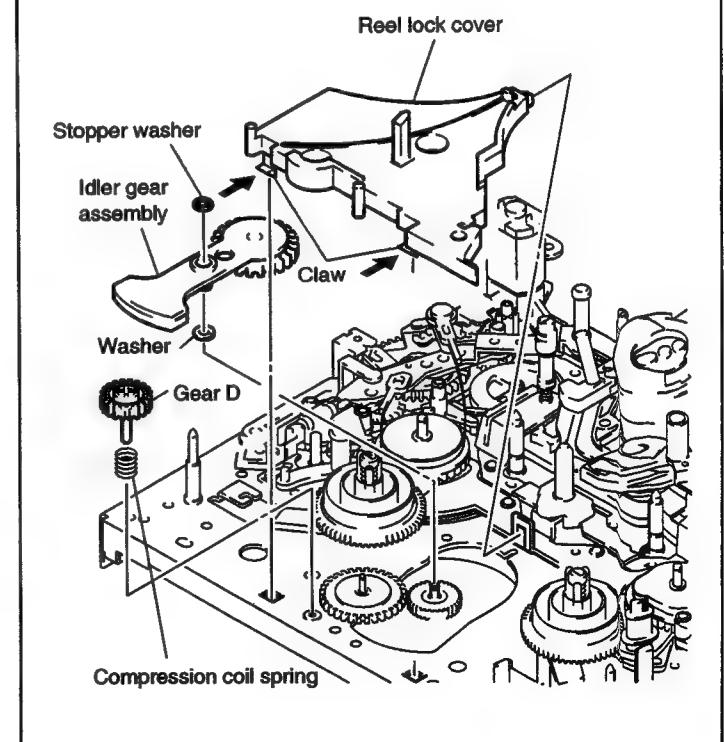
### Note

When the reel lock cover is removed, gear D and the compression coil spring will also be removed with it. Be careful not to lose them.

3. Remove the stopper washer shown in the figure, and remove the idler gear assembly.

### Note

When the idler gear assembly is removed, the washer shown in the figure will also be removed with it. Be careful not to lose the washer.



### Attachment

4. Attach the new idler gear assembly in the reverse order of step 3.
5. Attach the parts removed in the reverse order of steps 1 and 2.

### Check/Adjustment

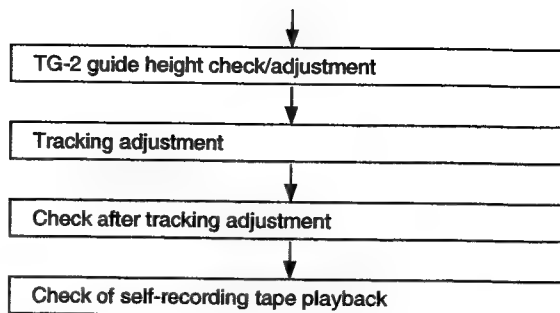
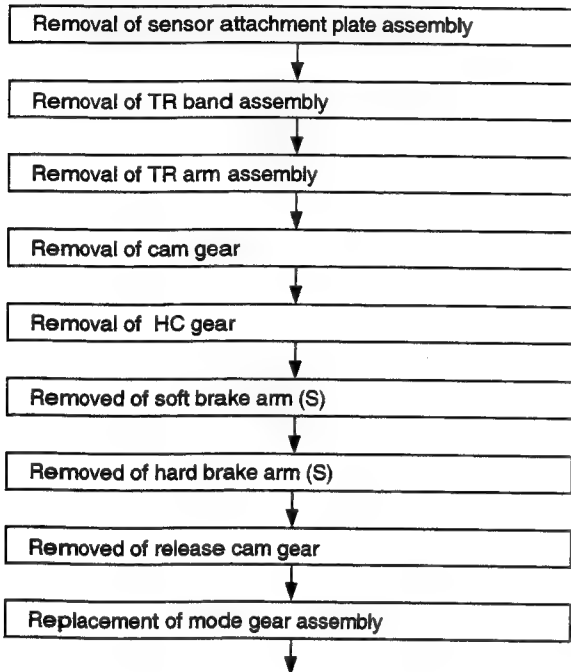
6. Perform reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)



## 6-27. Replacement of Mode Gear Assembly

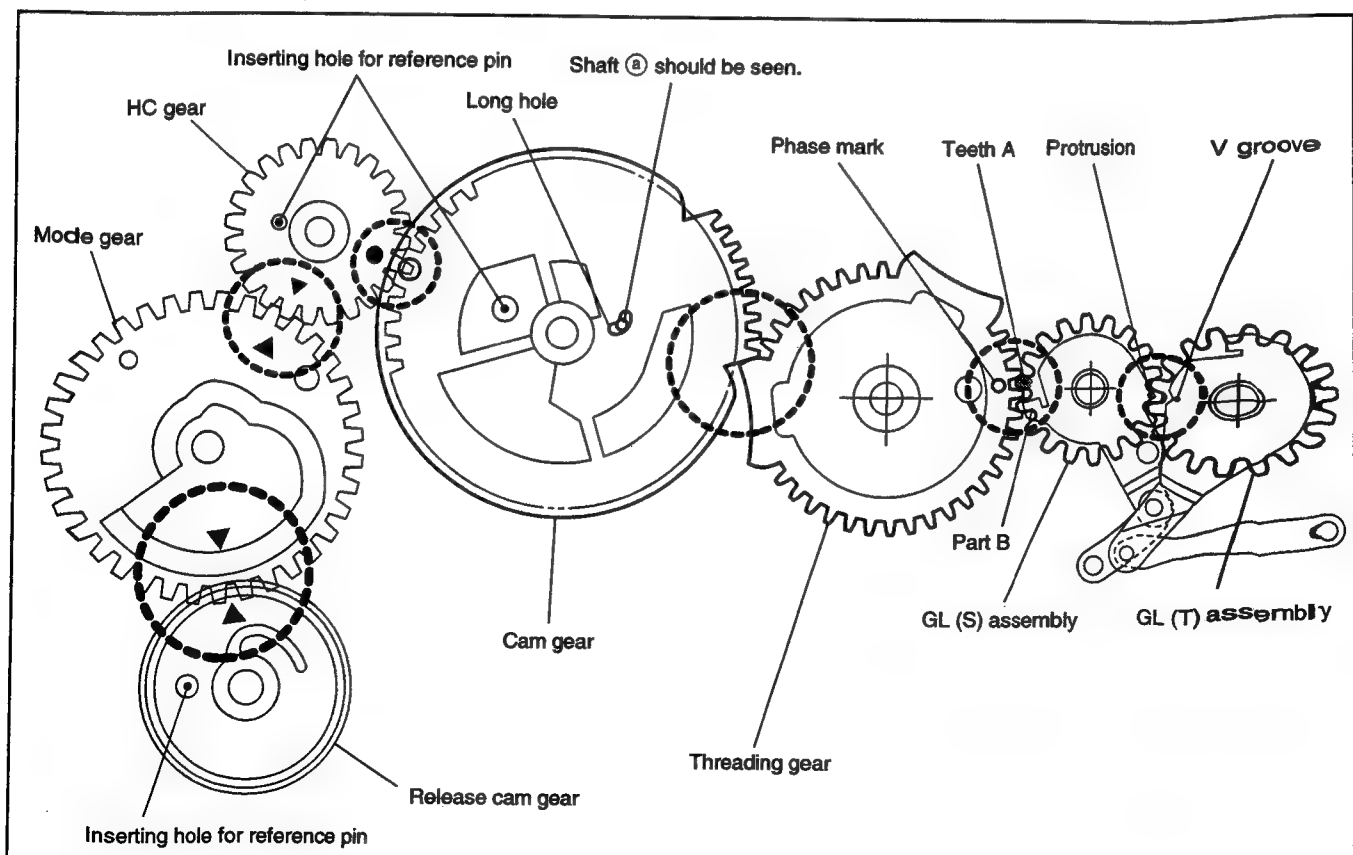
Reel table position: Standard cassette position

### Replacement Flowchart



### Removal

1. Remove the sensor attachment plate assembly. (Refer to Section 6-15.)
2. Remove the TR band assembly. (Refer to Section 6-12.)
3. Remove the TR arm assembly. (Refer to Section 6-16.)
4. Rotate No.1 gear in the counterclockwise direction to set it in the unthreading condition.
5. Insert the reference pin at the position shown in the figure, and adjust the phase of each gear.
6. Remove the cam gear.
7. Remove the HC gear.
8. Remove the soft brake arm (S). (Refer to Section 6-6.)
9. Remove the hard brake arm (S). (Refer to Section 6-7.)
10. Remove the release cam gear.

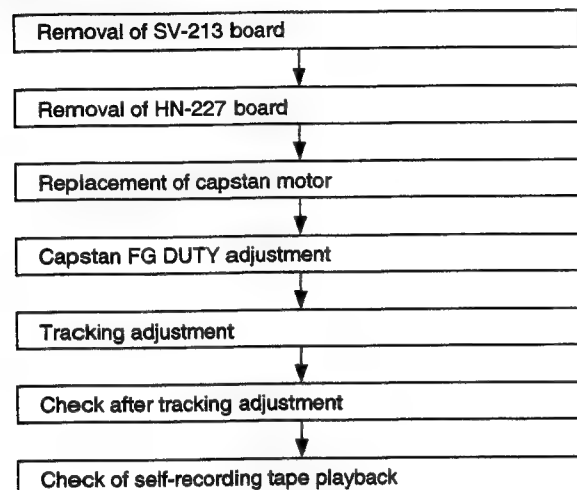




## 6-28. Replacement of Capstan Motor

Mode: Unthreading end

### Replacement Flowchart



### Removal

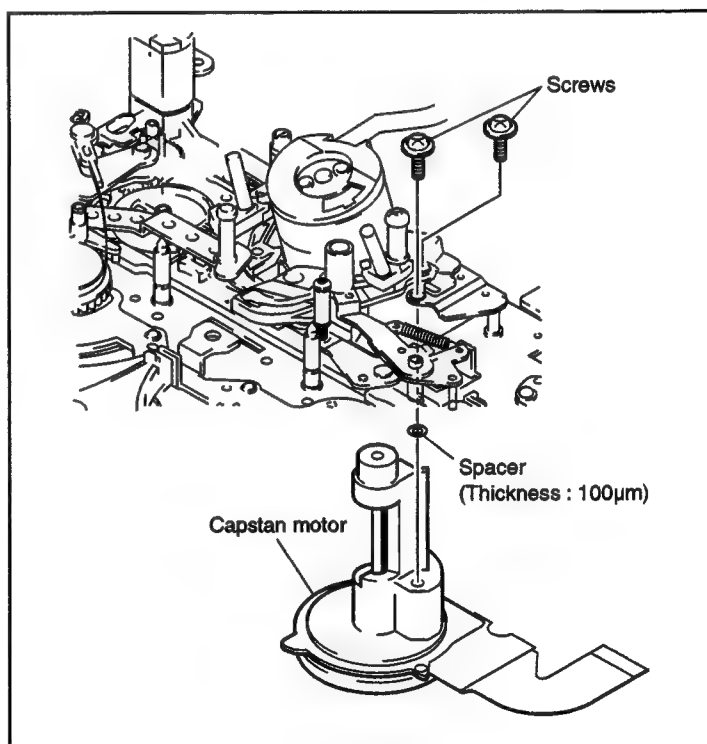
1. Remove the SV-213 board.  
(Refer to Section 2-9-8.)
2. Remove the HN-227 board.  
(Refer to Section 2-9-9.)
3. Remove the two screws shown in the figure, and remove the capstan motor and spacer.

### Attachment

4. Attach the new capstan motor and spacer in the reverse order of step 3.
5. Attach the parts removed in the reverse order of steps 1 and 2.

### Check/Adjustment

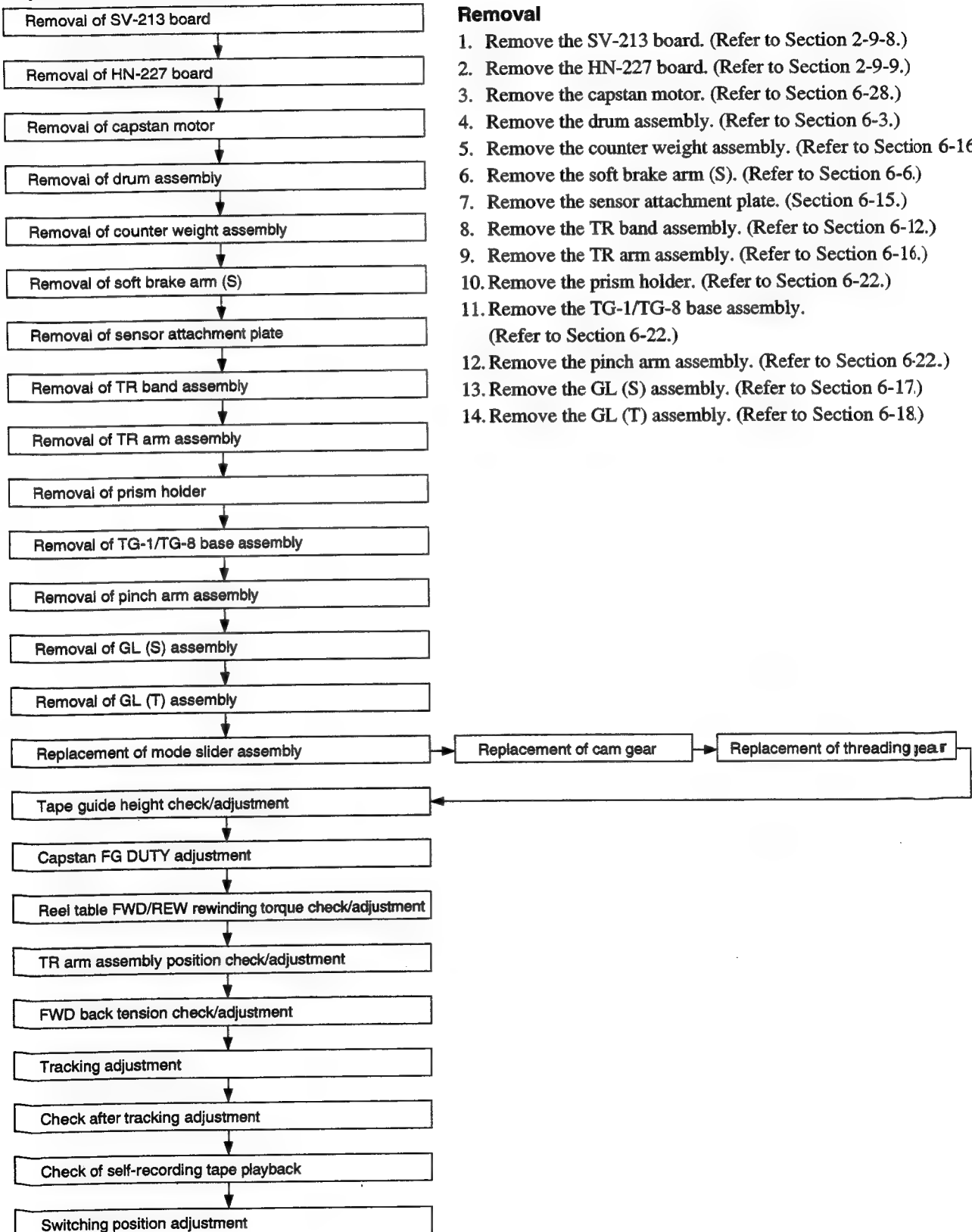
6. Perform the capstan FG DUTY adjustment at Menu M601. (Refer to Section 10-2-1.)
7. Perform the tracking adjustment.  
(Refer to Section 7-3.)
8. Perform the check after tracking adjustment.  
(Refer to Section 7-4.)
9. Perform the check of self-recording tape playback. (Refer to Section 7-5.)



## 6-29. Replacement of Mode Slider / Cam Gear / Threading Gear

Mode: Unthreading end

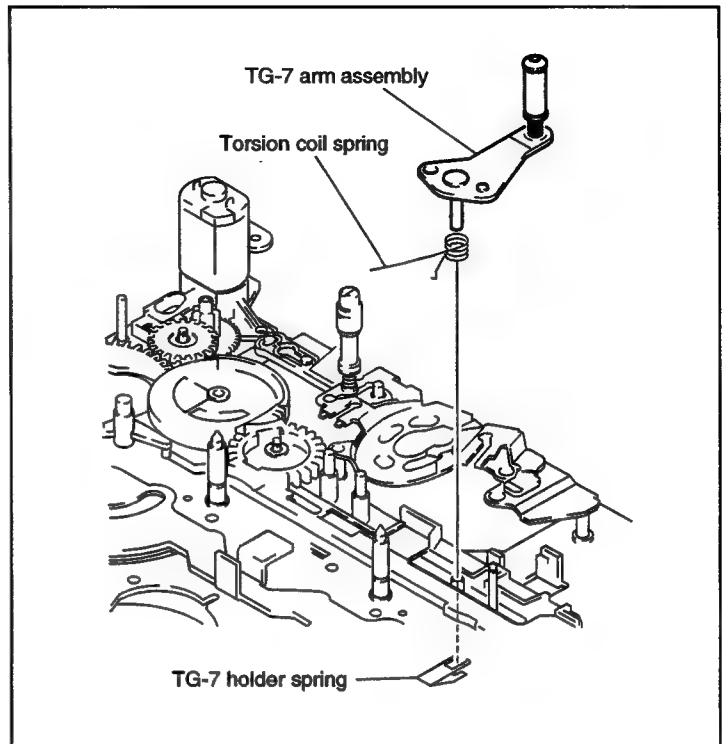
### Replacement Flowchart



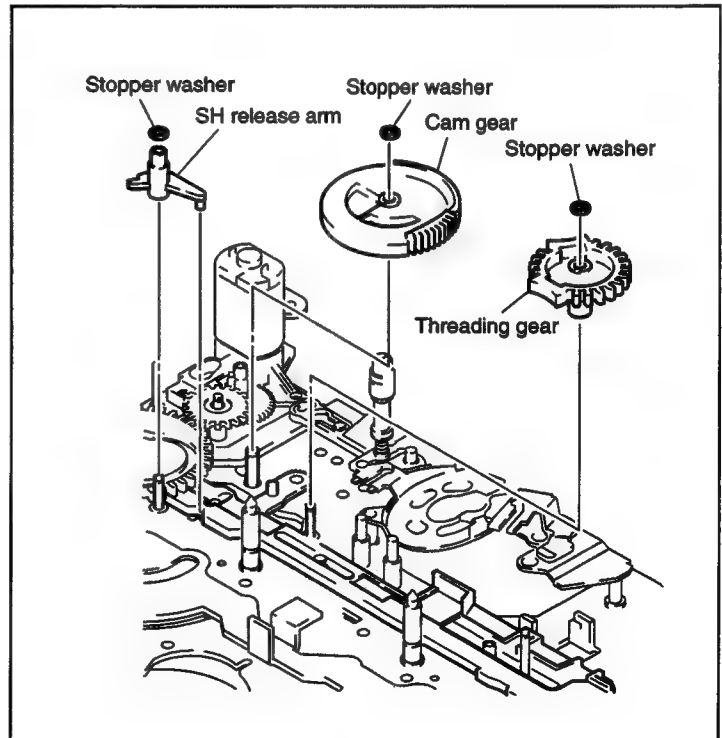
### Removal

1. Remove the SV-213 board. (Refer to Section 2-9-8.)
2. Remove the HN-227 board. (Refer to Section 2-9-9.)
3. Remove the capstan motor. (Refer to Section 6-28.)
4. Remove the drum assembly. (Refer to Section 6-3.)
5. Remove the counter weight assembly. (Refer to Section 6-16.)
6. Remove the soft brake arm (S). (Refer to Section 6-6.)
7. Remove the sensor attachment plate. (Section 6-15.)
8. Remove the TR band assembly. (Refer to Section 6-12.)
9. Remove the TR arm assembly. (Refer to Section 6-16.)
10. Remove the prism holder. (Refer to Section 6-22.)
11. Remove the TG-1/TG-8 base assembly.  
(Refer to Section 6-22.)
12. Remove the pinch arm assembly. (Refer to Section 6-22.)
13. Remove the GL (S) assembly. (Refer to Section 6-17.)
14. Remove the GL (T) assembly. (Refer to Section 6-18.)

15. Remove the TG-7 holder spring, and remove the TG-7 arm assembly and torsion coil spring.



16. Remove the stopper washer, and remove the SH release arm.  
17. Remove the stopper washer, and remove the threading gear.  
18. Remove the stopper washer, and remove the cam gear.



19. Remove the stopper washer shown in the figure, and remove the mode slider.

### Attachment

20. Attach the new mode slider in the reverse order of step 19.  
Apply grease on to the portion of the mode slider shown in the figure.
21. Attach the parts removed in the reverse order of steps 1 to 18.

### Note

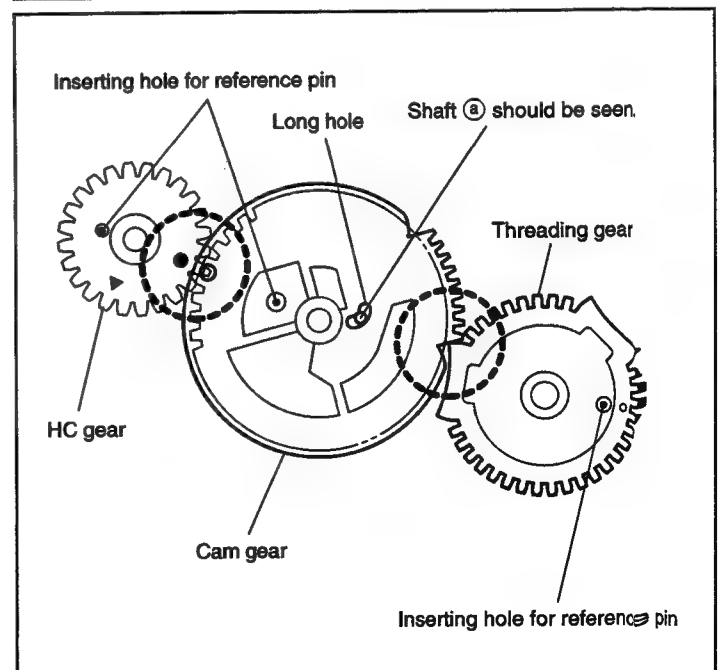
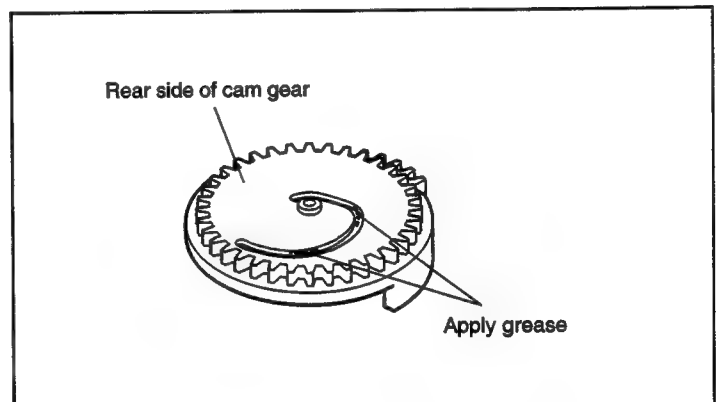
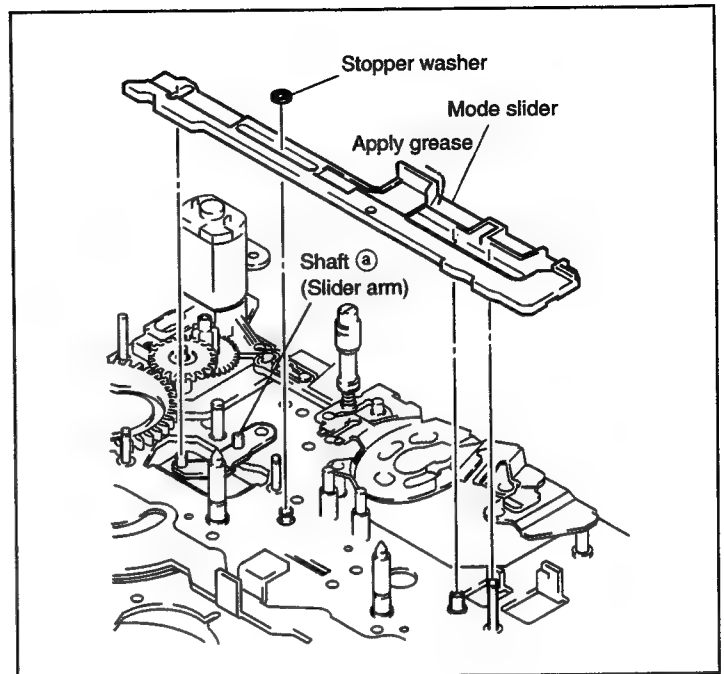
When replacing the cam gear, apply grease on to the groove of rear side of the cam gear, then attach it.

22. Adjust the phase as follows.

- 1) When attaching the cam gear and threading gear, insert the reference pin into the hole of each gear shown in the figure, and adjust the phase.
- 2) At the same time, make sure that shaft ② of the slider arm should be seen from the long hole of the cam gear.

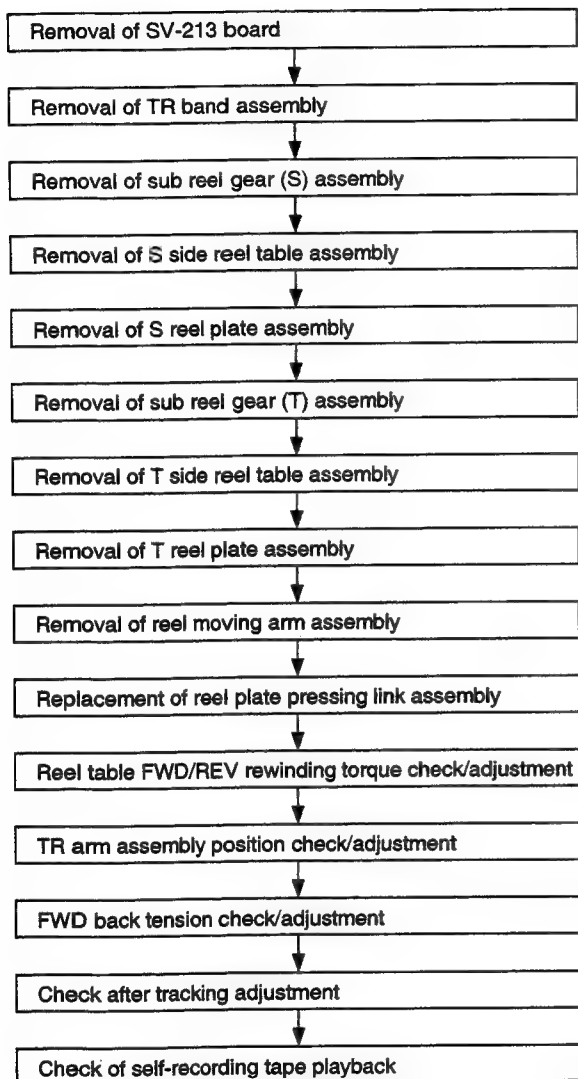
### Adjustment

23. Perform the tape guide height check/adjustment.  
(Refer to Section 6-37.)
24. Perform the capstan FG DUTY adjustment at Menu M601. (Refer to Section 10-2-1.)
25. Perform the reel table FDW/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
26. Perform the TR arm assembly position check/adjustment. (Refer to Section 6-40.)
27. Perform the FWD back tension check/adjustment. (Refer to Section 6-39.)
28. Perform the tracking adjustment.  
(Refer to Section 7-3.)
29. Perform the check after tracking adjustment.  
(Refer to Section 7-4.)
30. Perform the check of self-recording tape playback. (Refer to Section 7-5.)
31. Perform the switching position adjustment at Menu M605. (Refer to Section 7-6.)



## 6-32. Replacement of Reel Plate Pressing Link Assembly

### Replacement Flowchart



### Removal

1. Remove the SV-213 board. (Refer to Section 2-9-8.)
2. Remove the TR band assembly. (Refer to Section 6-12.)
3. Remove the sub reel gear (S) assembly.  
(Refer to Section 6-10.)
4. Remove the S side reel table assembly. (Refer to Section 6-4.)
5. Remove the S reel plate assembly. (Refer to Section 6-19.)
6. Remove the sub reel gear (T) assembly.  
(Refer to Section 6-11.)
7. Remove the T side reel table assembly. (Refer to Section 6-5.)
8. Remove the T reel plate assembly. (Refer to Section 6-20.)
9. Remove the reel moving arm assembly.  
(Refer to Section 6-31.)

10. Remove the reel plate pressing link assembly from the shaft (at three parts) in the arrow direction as shown in the figure.

#### Attachment

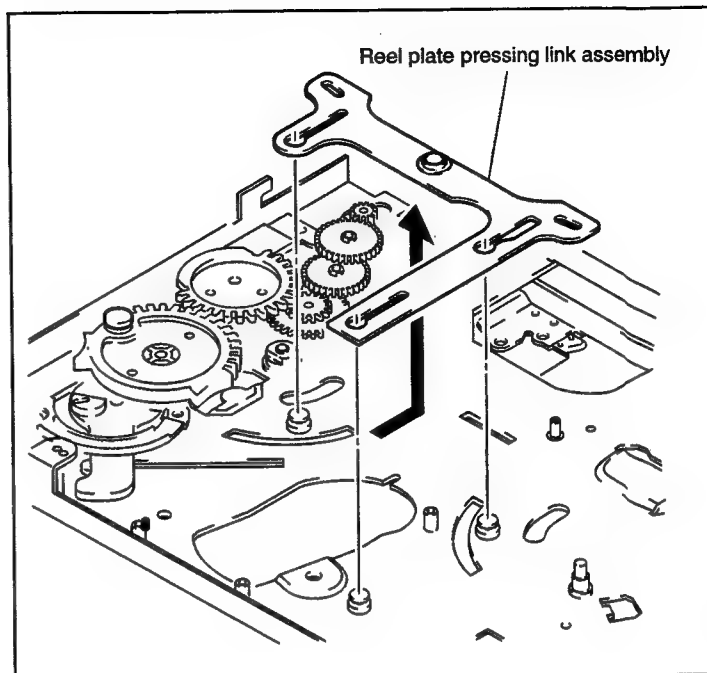
11. Attach the new reel plate pressing link assembly in the reverse order of step 10.
12. Attach the parts removed in the reverse order of steps 1 to 11.

#### Note

When attaching the parts, make sure that the S side reel table assembly and T side reel table assembly, and the sub reel gear (S) assembly and sub reel gear (T) assembly are not mixed up with each other.

#### Check/Adjustment

13. Perform the reel table FWD/REV rewinding torque check/adjustment. (Refer to Section 6-38.)
14. Perform the TR arm assembly position check/adjustment. (Refer to Section 6-40.)
15. Perform the FWD back tension check/adjustment. (Refer to Section 6-39.)
16. Perform the check after tracking adjustment. (Refer to Section 7-4.)
17. Perform the check of self-recording tape playback. (Refer to Section 7-5.)

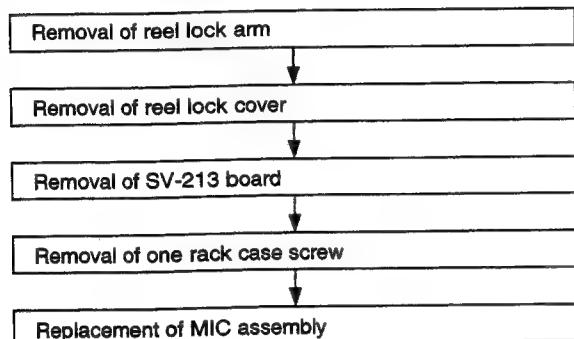




## 6-33. Replacement of MIC Assembly

Reel table position: Center of the standard cassette position and mini cassette position

### Replacement Flowchart



### Removal

1. Remove the reel lock arm.  
(Refer to Section 6-26.)
2. Remove the reel lock cover.  
(Refer to Section 6-26.)
3. Remove the SV-213 board.  
(Refer to Section 2-9-8.)
4. Rotate gear M of the shift motor, and move the MIC lever to the position shown in the figure.
5. Remove the screw of the rack case.
6. Lift up the MIC lever slightly, rotate the MIC assembly in the arrow direction and slide it, then further lift up the rack case slightly and remove it.

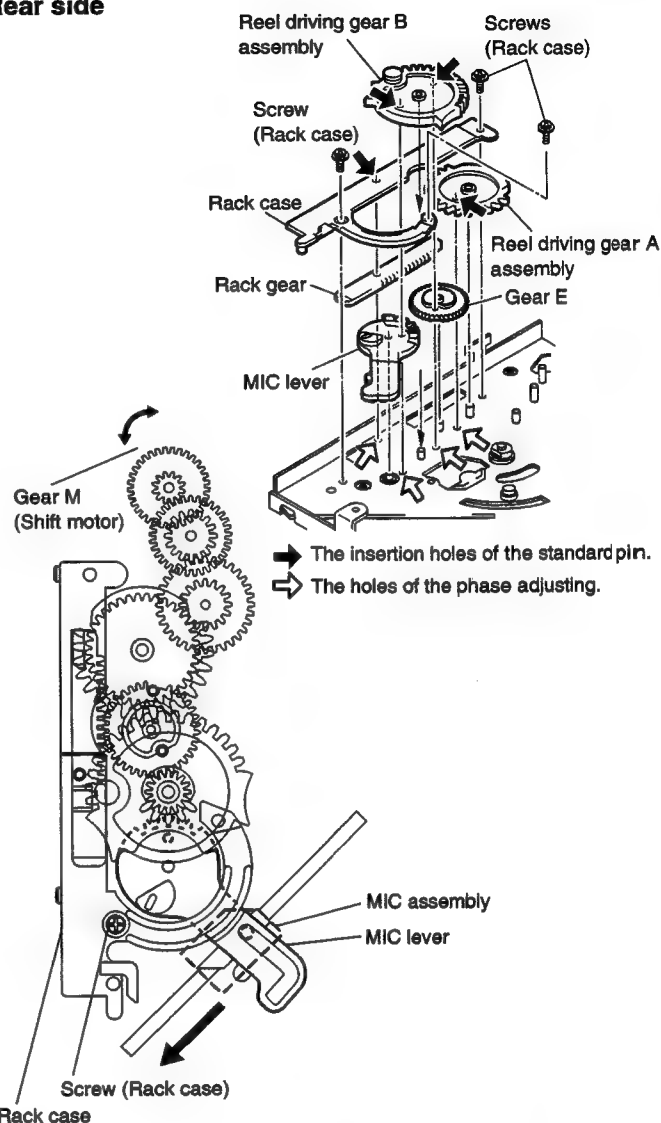
### Attachment

7. Attach the MIC assembly in the reverse order of steps 4 to 6.
8. Attach the parts removed in the reverse order of steps 1 to 3.

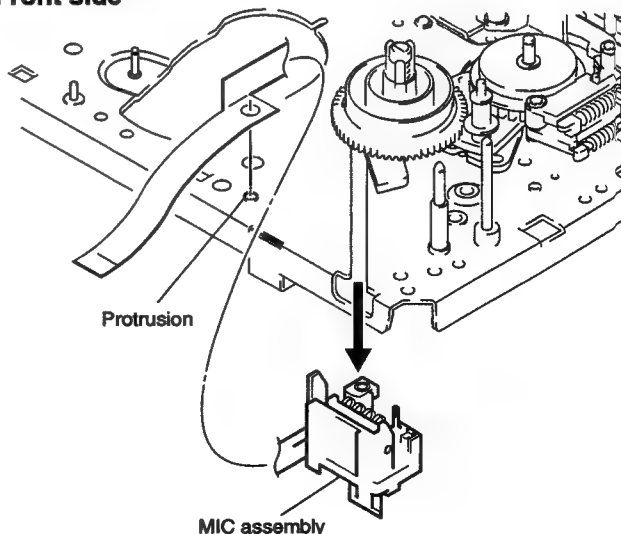
### Check

9. After replacing, perform the phase check of each gear as follows.
  - Insert the reference pin into the gear hole shown in the figure, and check that it goes into the hole on the chassis.

### Rear side



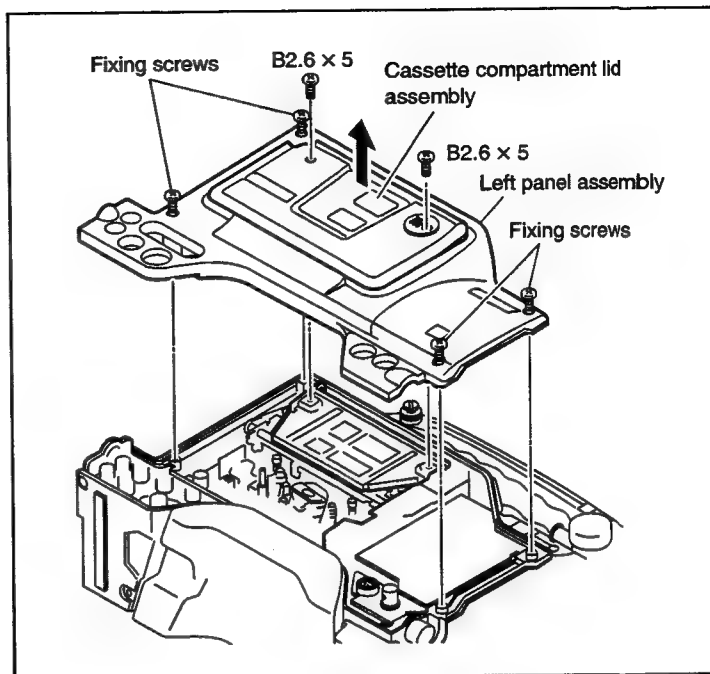
### Front side



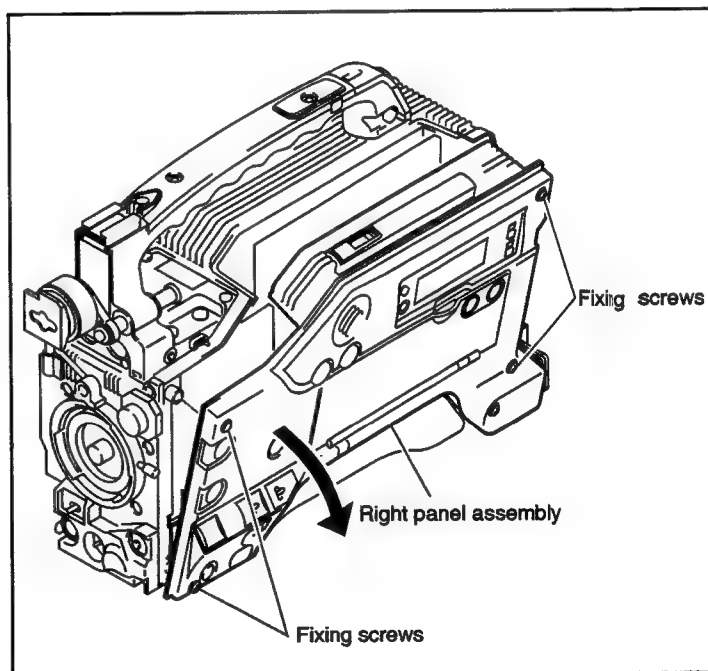
## 6-34. Replacement of CCD Unit

### Removal

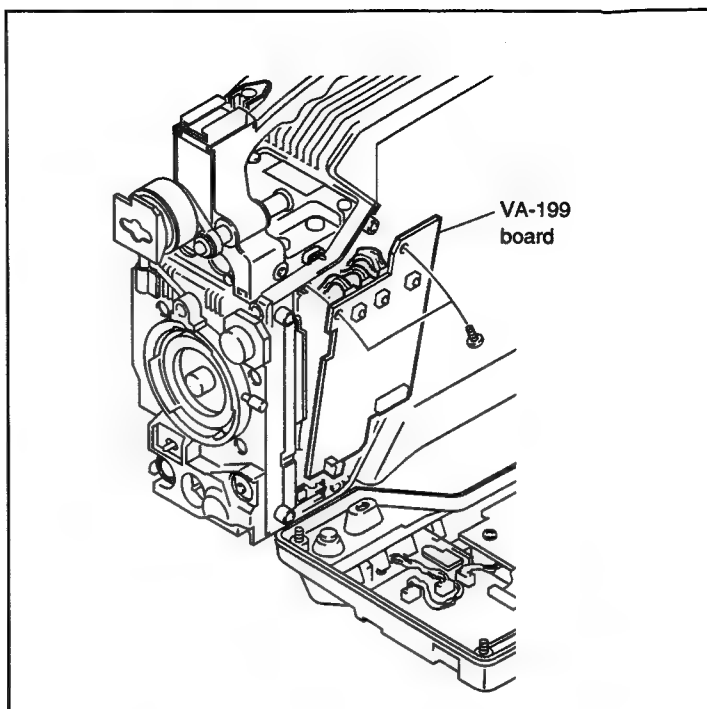
1. Remove the four screws of the left panel assembly and remove the two screws of the Cassette compartment lid assembly which is part of the left panel assembly.



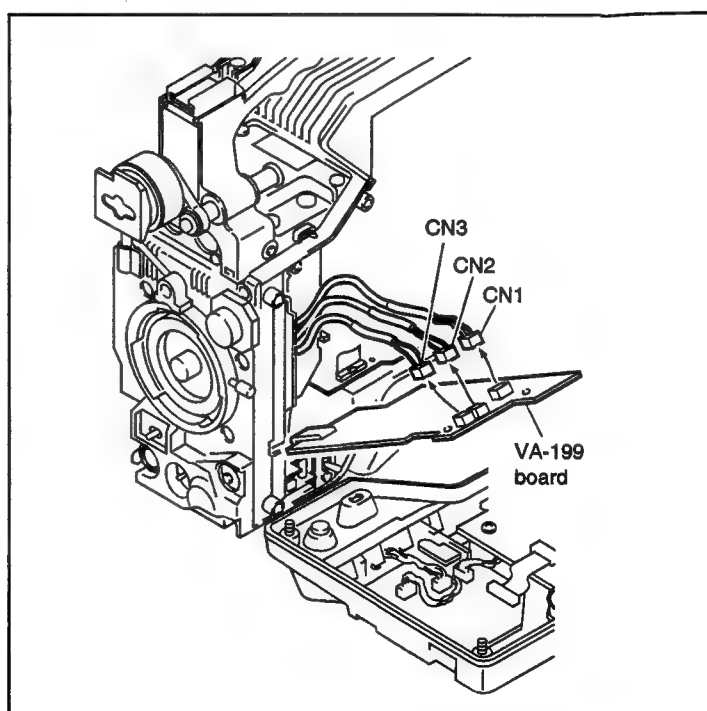
2. Remove the four screws of the right panel assembly.



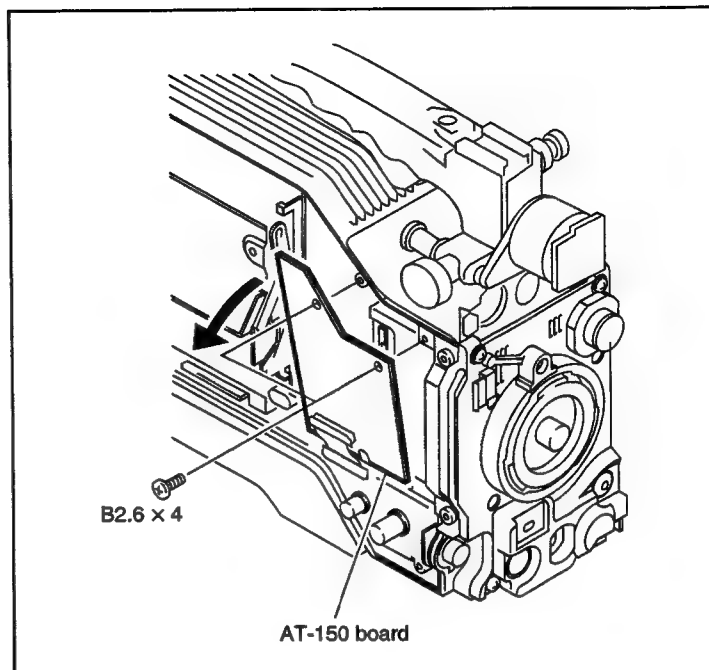
3. Remove the two screws of the VA-199 board.



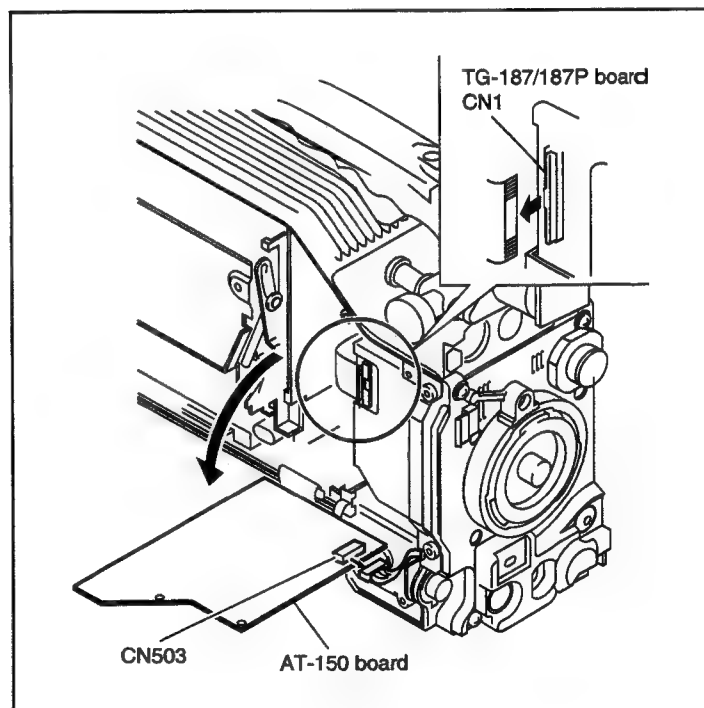
4. Disconnect the connectors CN1, CN2 and CN3 on the VA-199 board.



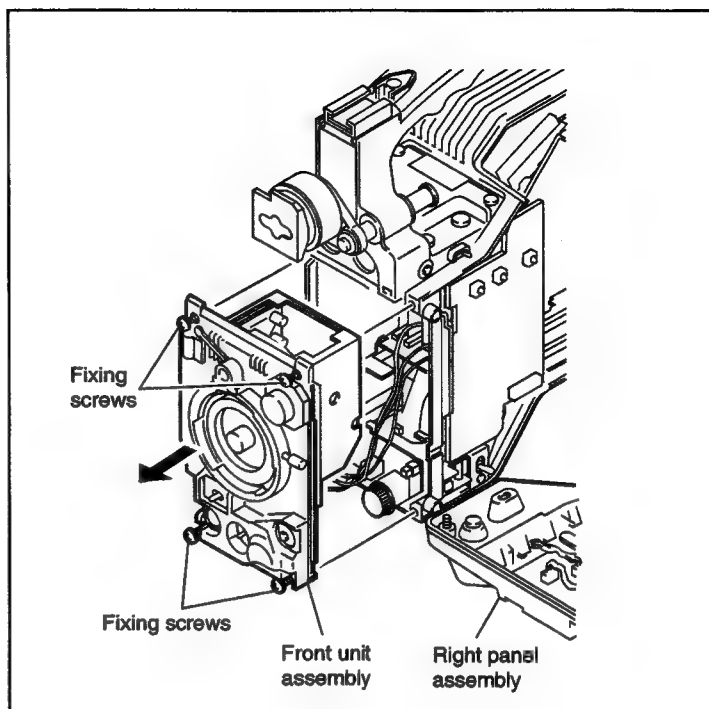
5. Remove the two screws of the AT-150 board.



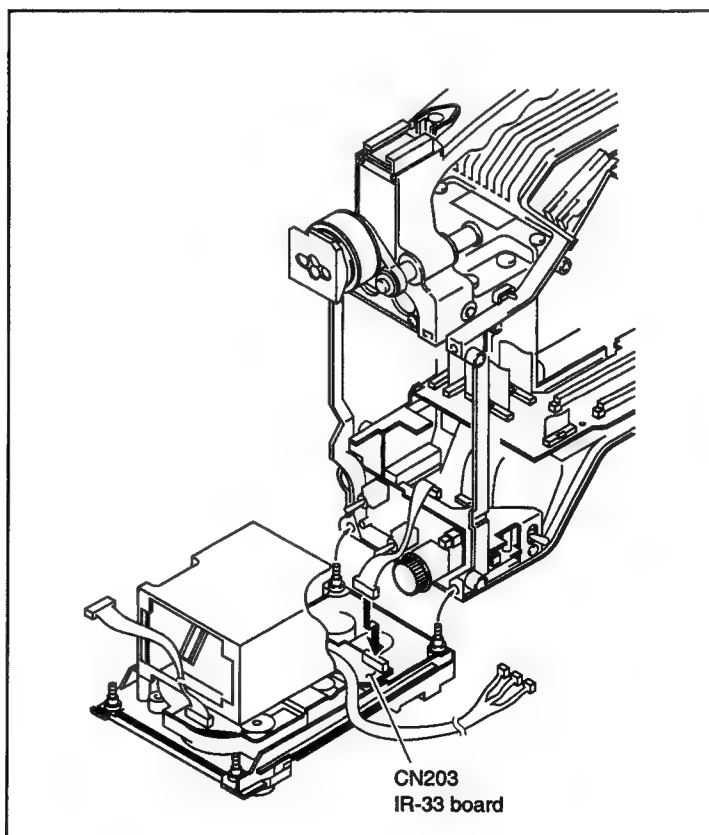
6. Disconnect the connector CN1 on the TG-187/187P board and the connector CN503 on the AT-150 board.



7. Remove the four screws of the front unit assembly and pull out the front unit assembly carefully in the arrow direction.



8. Disconnect the connector CN203 on the IR-33 board.



9. Remove the setscrew (3 × 4) to remove the filter knob.
10. Remove the three screws (B2.6 × 5) to remove the shield case.
11. Remove the four screws (B3 × 6), and remove the CCD unit from the Front unit assembly.

**Note**

When handling the CCD unit, pay attention not to stress each PA board.

12. First remove the holder for transportation from the replacement CCD unit. Then replace the defective CCD unit with it.

**Note**

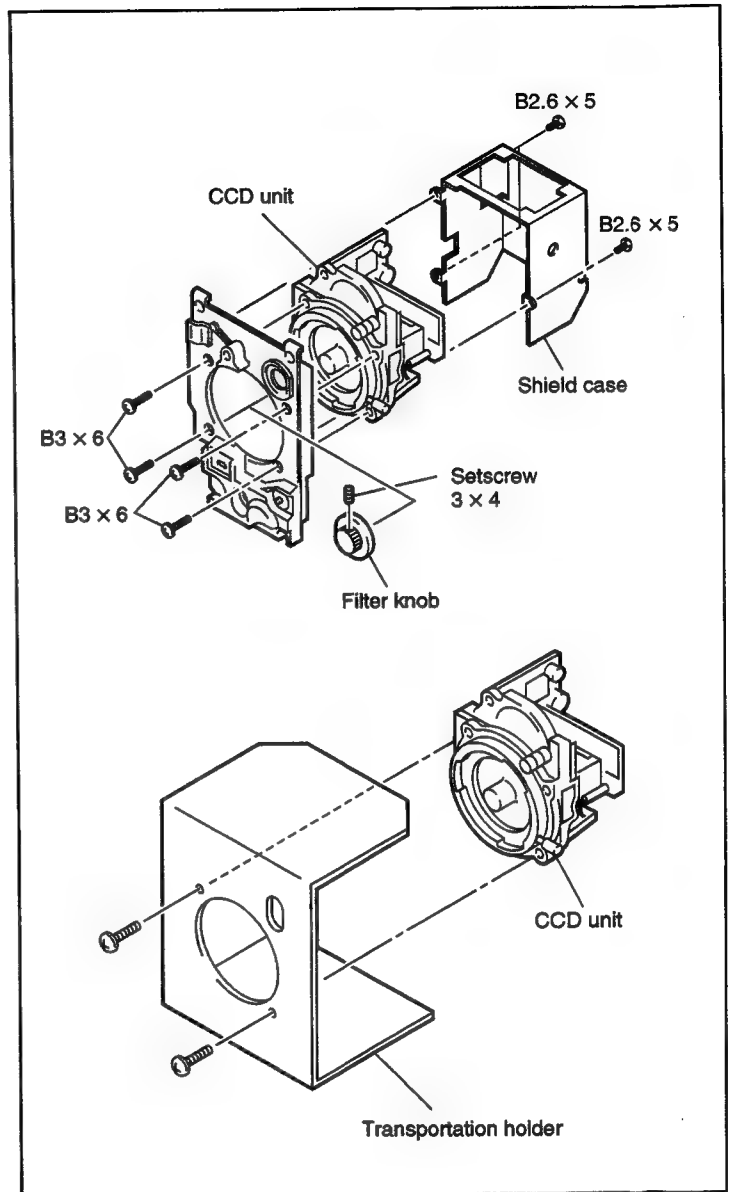
Re-use the holder for shipping back the replacement unit.

**Attachment**

13. Assemble in the reverse order of removal.

**Adjustment**

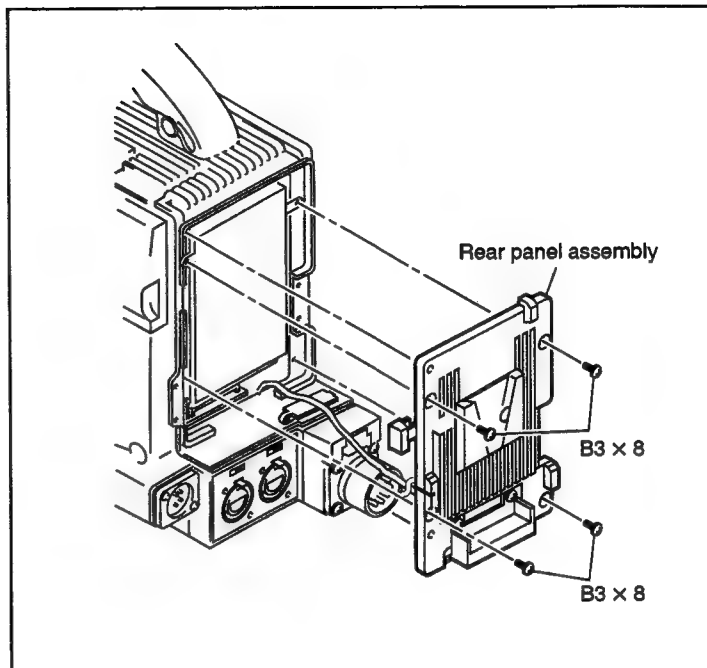
14. After the replacement is completed, perform several adjustments referring to Section 9-1-4. Note on Adjustment. In addition, perform MEMORY BACK UP referring to Service menu "Page 21" in Section 4-2-2.



## 6-35. Replacement of DC-DC Converter

### Removal

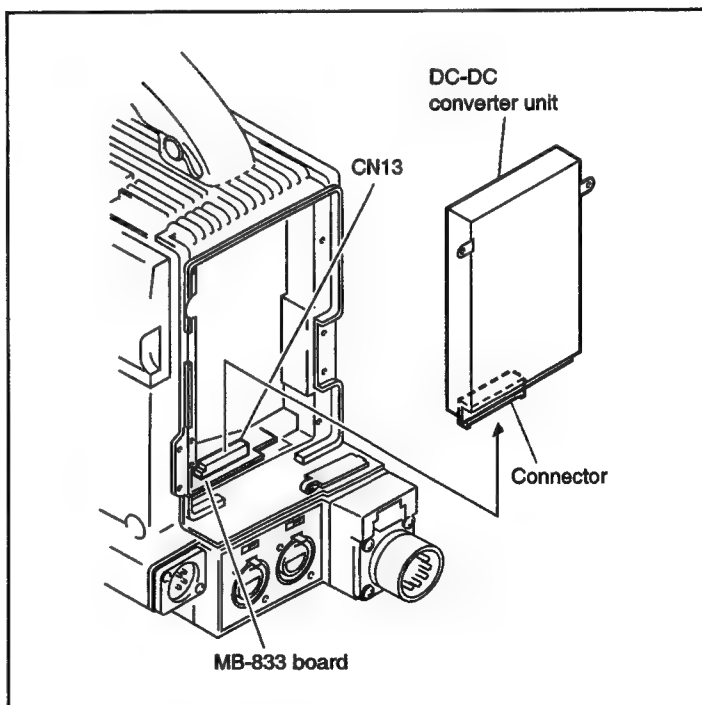
1. Remove the four screws of the Rear panel assembly.



2. Pull out the CN13 connector of the MB-833 board from the DC-DC converter in the arrow direction.

### Attachment

3. Attach a new parts in the reverse order of steps 1 and 2.



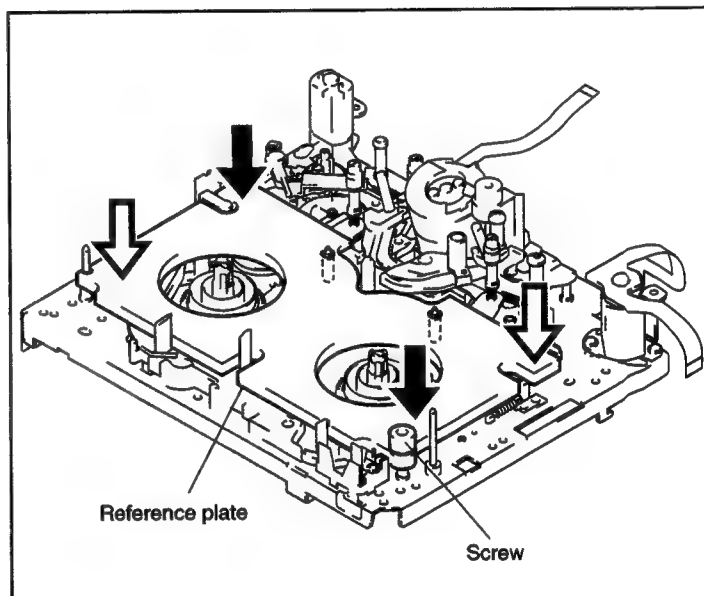
## Adjustment after Replacement of Main Parts

### 6-36. S Reel Table, T Reel Table Height Check/Adjustment

Reel table position: Standard cassette position

- Tools  
Reference plate: J-6442-410-A  
Reel table gauge: J-6442-430-A
- Perform the reel table height check/adjustment in the same way for the S reel table and T reel table.
- Perform with the cassette compartment removed.  
(Refer to Section 6-2.)

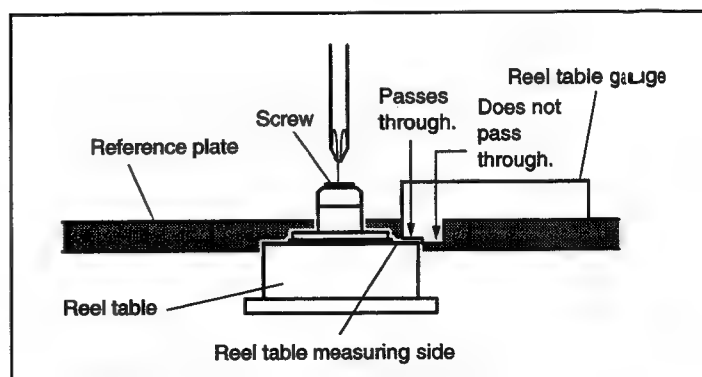
1. Place the reference plate onto the mechanical deck, press the four corners of the reference plate with your finger on the diagonal lines respectively as shown in the figure, and check that it does not shake. If it shakes, rotate the screw on the reference plate, and adjust so that it does not shake.



2. Push the reel table gauge against the reel table lightly as shown in the figure, and check that the tip of the gauge passes through the top part, but not the bottom. If this is not satisfied, rotate the screw of the reel table shown in the figure, and adjust.

#### Note

When adjusting the reel table, do not rotate the screw counterclockwise. Rotate it clockwise only. If rotated counterclockwise a reel table must be replaced.





## 6-37. Guide Height Check/ Adjustment

Reel table position: Standard cassette position

Mode: Threading end

- Tools

Reference plate: J-6442-410-A

Guide gauge: J-6442-420-A

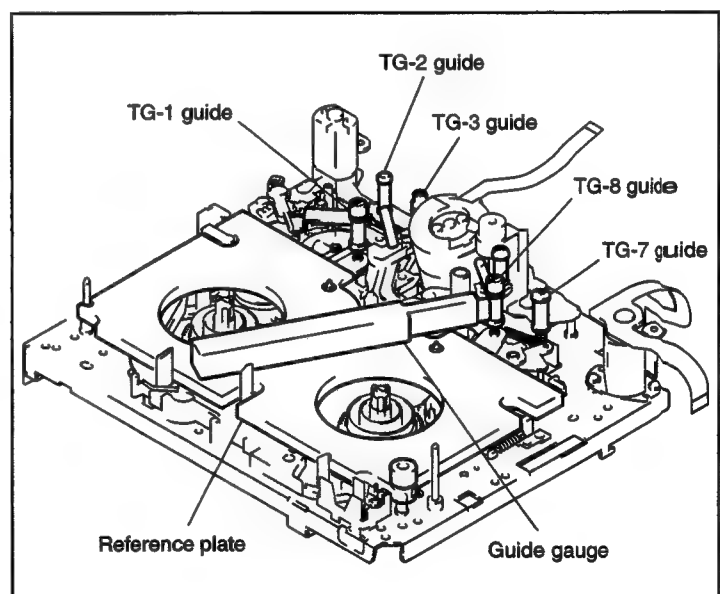
Tape guide adjustment screwdriver:  
J-6082-362-A

Three bond 1401B (screw-locking compound):  
7-432-114-11

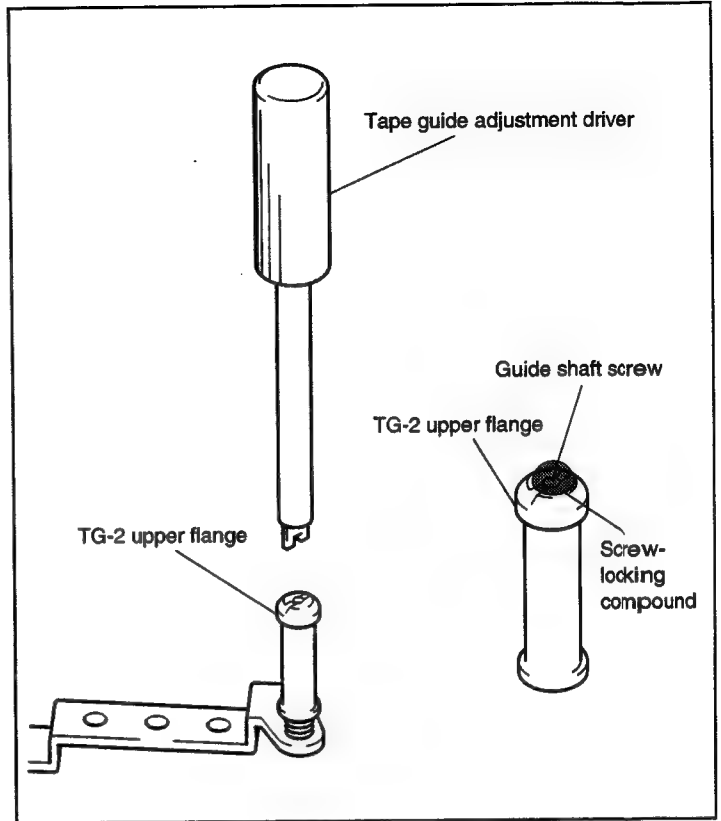
- Remove the cassette compartment.  
(Refer to Section 6-2.)

The following describes the method for performing the height check/adjustment of each guide.

- TG-1 guide  
(Adjust the guide height with the upper flange.)
- TG-2 guide  
(Adjust the guide height with the lower flange.)
- TG-3 guide  
(Adjust the guide height with the upper flange.)
- TG-7 guide  
(Adjust the guide height with the upper flange.)
- TG-8 guide  
(Adjust the guide height with the upper flange.)

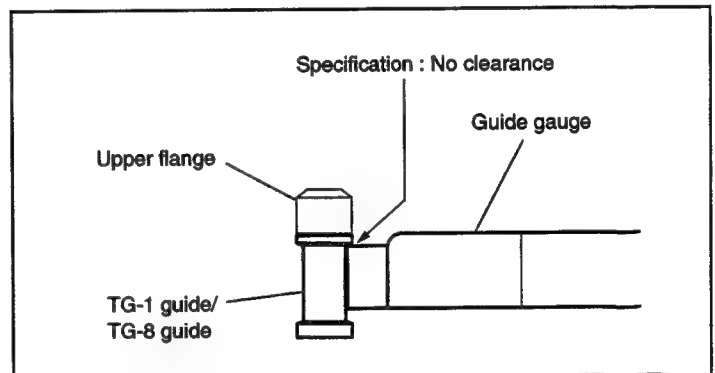


- Use the service tool tape guide adjustment screwdriver to adjust the height of the tape guides.
- After adjusting the tape guide height, apply screw-locking compound (Three bond 1401B) to the screw of the upper flange of the tape guides.



#### [TG-1, TG-8 Guide]

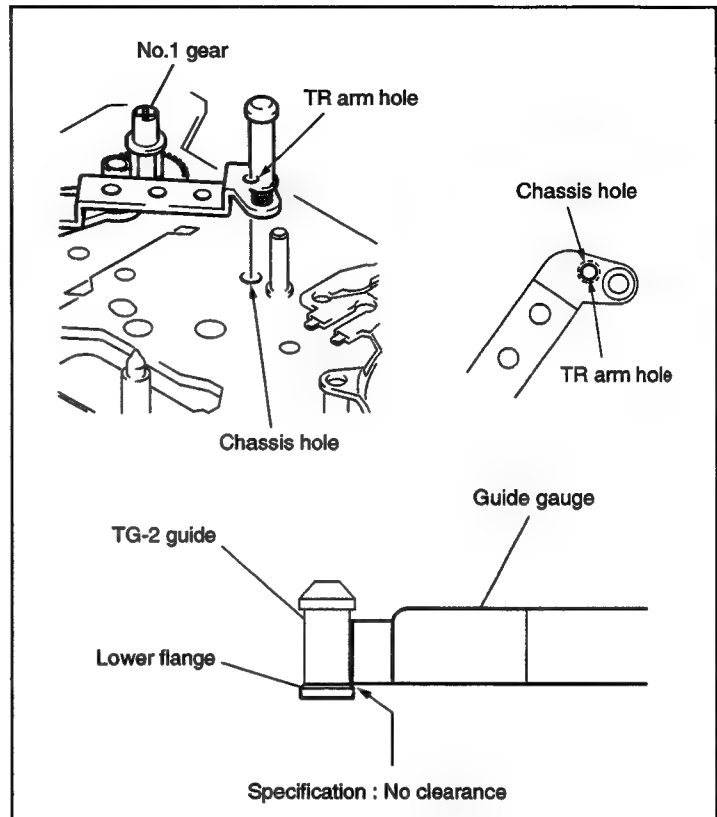
1. Place the reference plate on the mechanical deck.  
(Refer to Section 6-36. step 1.)
2. Place the guide gauge on the reference plate, push it to the guide lightly, and check that there is no clearance between the guide gauge and the upper flange.  
If this is not satisfied, rotate the flange and adjust.



### [TG-2 Guide]

1. Place the reference plate on the mechanical deck.  
(Refer to Section 6-36. step 1.)
2. Rotate the No.1 gear so that the TR arm hole and chassis hole shown in the figure are at the same position when seen from right above.
3. Place the guide gauge on the reference plate, push it to the guide lightly, and check that there is no clearance between the guide gauge and the lower flange.

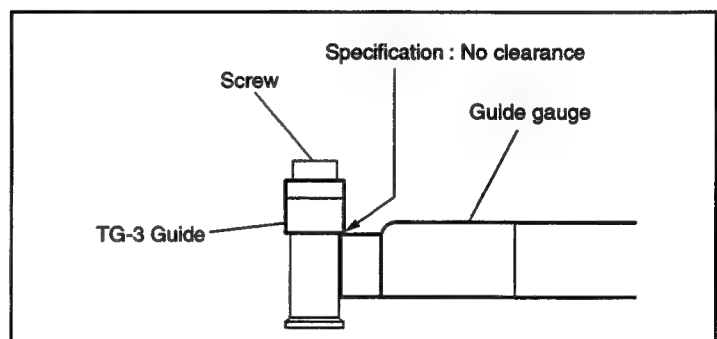
If this is not satisfied, rotate the flange and adjust.



### [TG-3 Guide]

1. Place the reference plate on the mechanical deck.  
(Refer to Section 6-36. step 1.)
2. Place the guide gauge on the reference plate, push it to the guide lightly, and check that there is no clearance between the guide gauge and the upper flange.

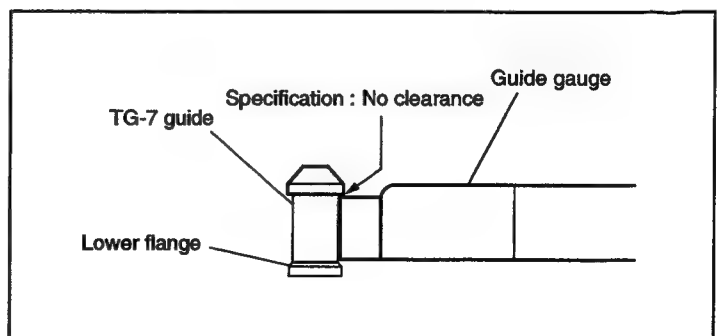
If this is not satisfied, rotate the screw shown in the figure and adjust.



### [TG-7 Guide]

1. Place the reference plate on the mechanical deck.  
(Refer to Section 6-36. step 1.)
2. Place the guide gauge on the reference plate, push it to the guide lightly, and check that there is no clearance between the guide gauge and the upper flange.

If this is not satisfied, rotate the flange and adjust.



## 6-38. Reel Table FWD/REV Rewinding Torque Check/ Adjustment

Reel table position: Standard cassette position

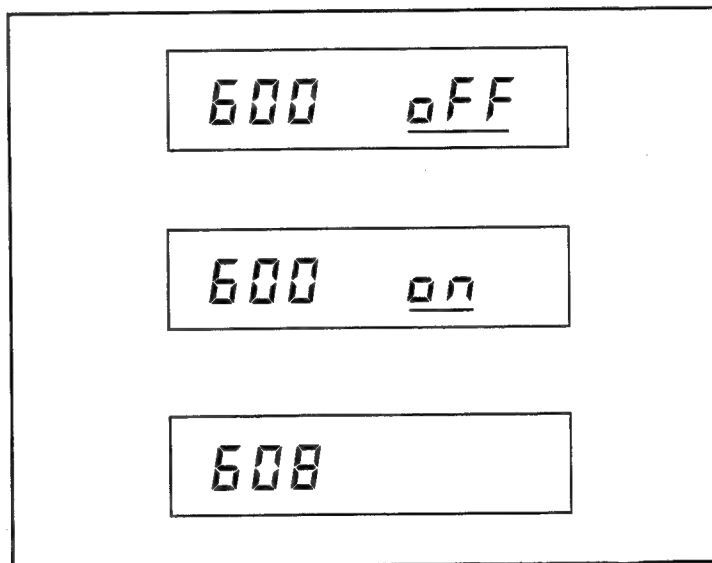
- Tools

Torque gauge (90ATG): J-6442-510-A

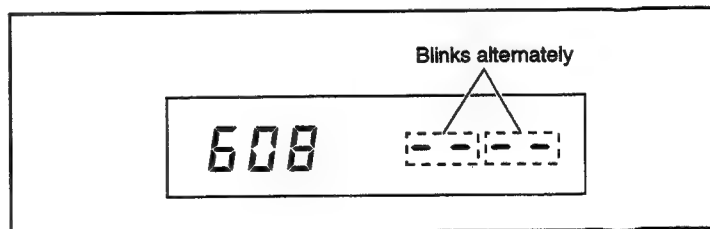
Rewinding torque measuring attachment:  
J-6442-520-A

Torque cassette: J-6082-373-A

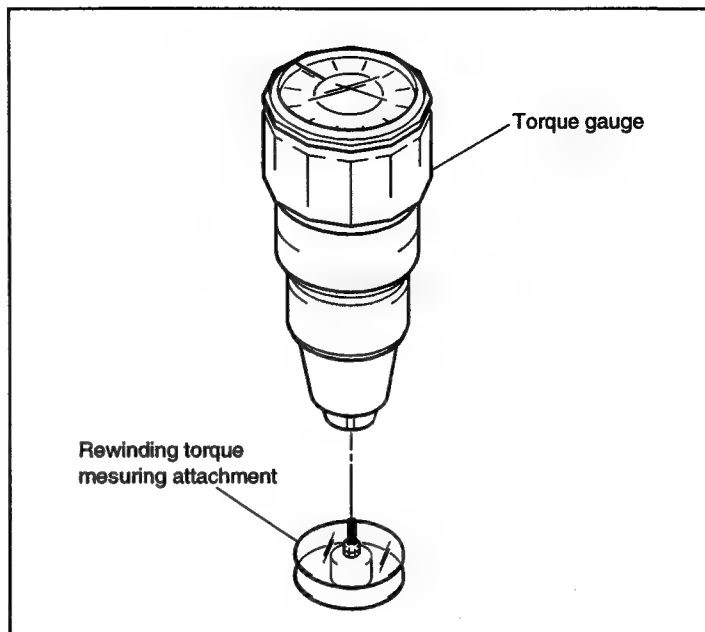
1. Remove the cassette compartment.  
(Refer to Section 6-2.)
2. While pressing the SHIFT button inside the TC panel, press the MENU button.
3. While pressing MENU button, release the SHIFT button. Check that "600 oFF" is displayed about 1 second later, and release the MENU button. (Displayed characters underlined in the following description indicate that they are blinking.)
4. Press the RESET (MENU SET) button once to blink "oFF."
5. Press the ADVANCE button once and select "on." (on and oFF are repeated each time the ADVANCE button is pressed.)
6. Press the RESET (MENU SET) button once.
7. Press the ADVANCE button or SHIFT button to display Menu No. 608.



8. Press the RESET (MENU SET) button.  
Check that the parts displayed on the display window blink alternately as shown in the figure.



9. Set the rewinding torque measuring attachment to the torque gauge (90ATG) as shown in the figure.



10. Place the torque gauge on the T reel table, press the STOP key, and rotate the reel table to the FWD side.
11. Adjust the torque gauge pointer to "0" and check that the torque gauge value satisfies the specification.

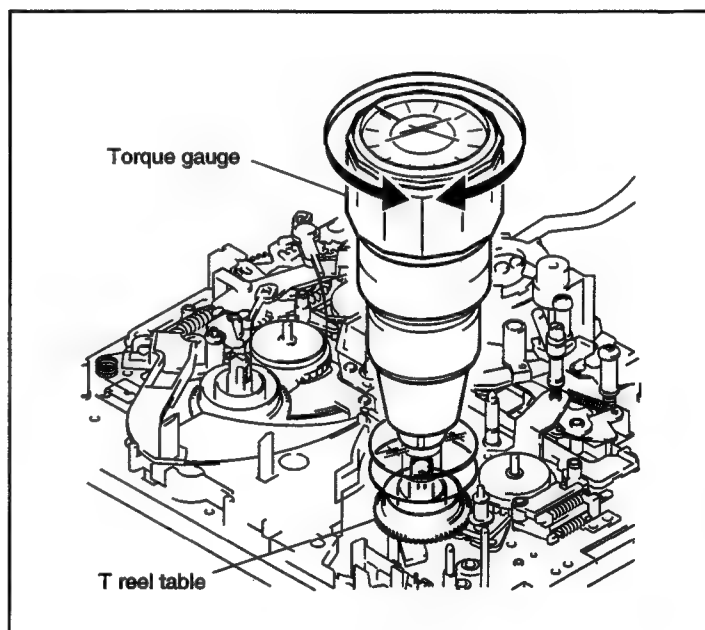
**Specification:**

FWD rewinding torque:  $0.0052 \pm 0.0002 \text{ N}\cdot\text{m}$   
( $52 \pm 2 \text{ g}\cdot\text{cm}$ )

If it does not, perform the following adjustment.

- When the torque value is towards the + side:  
Press the REW key and adjust so that the torque value is within the specification.
- When the torque value is towards the – side:  
Press the FF key and adjust so that the torque value is within the specification.

12. Press the STOP key, and stop the reel table from rotating.



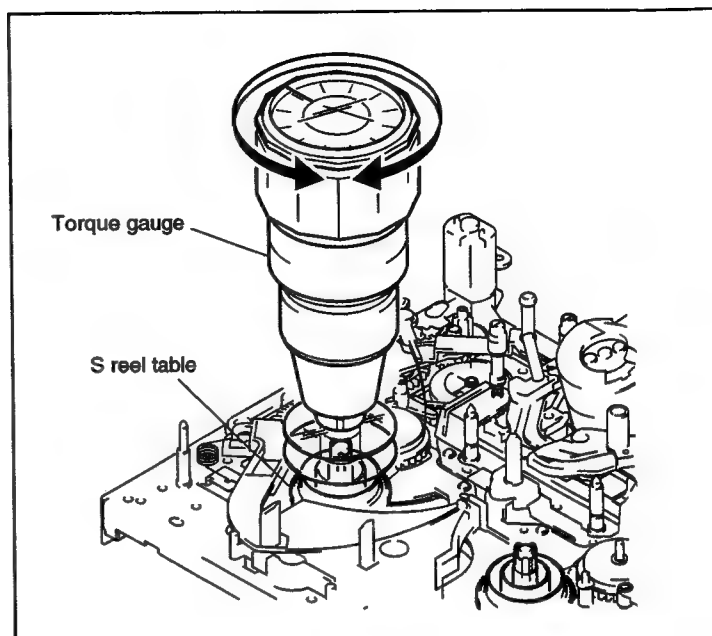
13. Place the torque gauge on the S reel table, press the STOP key, and rotate the reel table towards the REV side.
14. Adjust the torque gauge pointer to "0" and check that the torque gauge value satisfies the specification.

**Specification:**

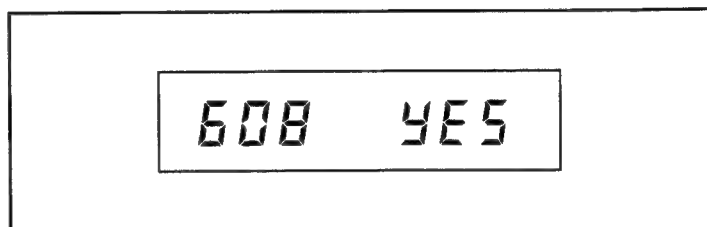
REV rewinding torque:  $0.0052 \pm 0.0002 \text{ N}\cdot\text{m}$   
 $(52 \pm 2 \text{ g}\cdot\text{cm})$

If it does not, perform the following adjustment.

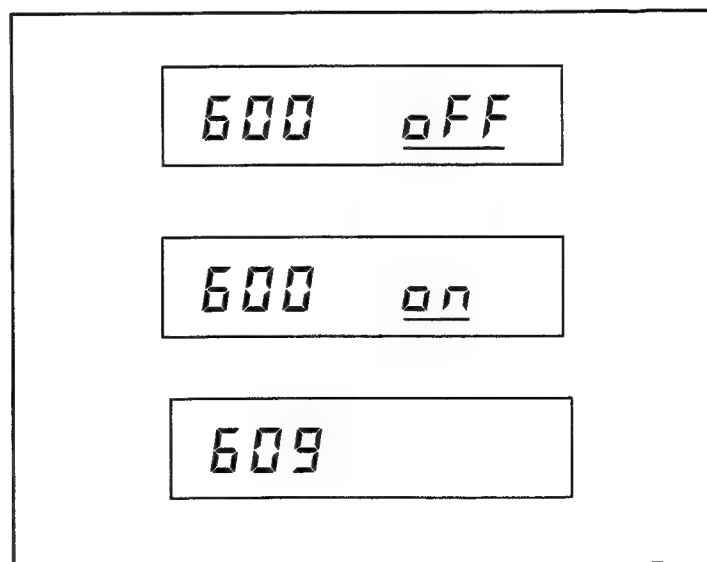
- When the torque value is towards the + side:  
Press the REW key and adjust so that the torque value is within the specification.
- When the torque value is towards the – side:  
Press the FF key and adjust so that the torque value is within the specification.



15. Press the STOP key, and stop the reel table from rotating.
16. After removing the torque gauge, press the EJECT key, and check that the display windows is as shown in the figure.
17. Attach the cassette compartment.  
(Refer to Section 6-2.)



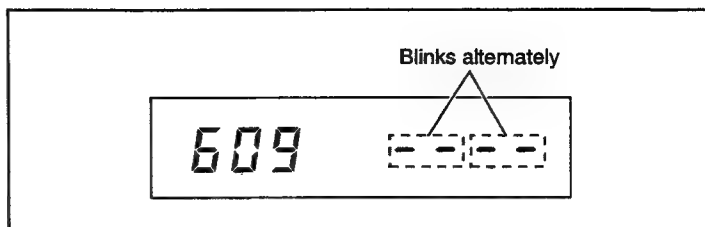
18. While pressing the SHIFT button inside the TC panel, press the MENU button.
19. While pressing MENU button, release the SHIFT button. Check that "600 oFF" is displayed about 1 second later, and release the MENU button.  
(Displayed characters underlined in the following description indicate that they are blinking.)
20. Press the RESET (MENU SET) button once to blink "oFF."
21. Press the ADVANCE button once and select "on." (on and oFF are repeated each time the ADVANCE button is pressed.)
22. Press the RESET (MENU SET) button once.
23. Press the ADVANCE button or SHIFT button to display Menu No. 609.



24. Press the RESET (MENU SET) button.

Check that the parts displayed on the display window blink alternately as shown in the figure.

25. Insert the torque cassette, and check that the STOP mode is set.



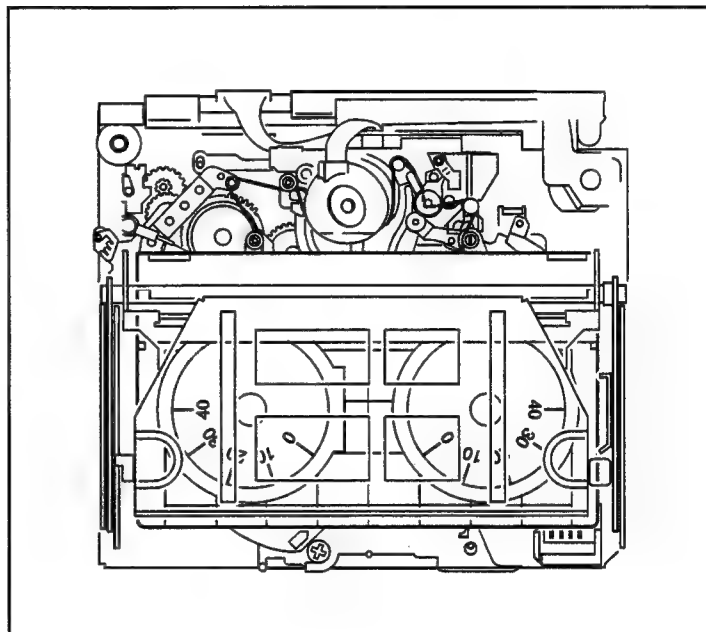
26. Press the STOP key, and check that the torque cassette value of the FWD tape path satisfies the specification.

**Specification:**

FWD rewinding torque:  $0.0010 \pm 0.0001 \text{ N}\cdot\text{m}$   
( $10 \pm 1 \text{ g}\cdot\text{cm}$ )

If it does not, perform the following adjustment.

- When the torque value is towards the + side:  
Press the REW key and adjust so that the torque value is within the specification.
- When the torque value is towards the – side:  
Press the FF key and adjust so that the torque value is within the specification.



27. Press the STOP key, and check that the torque cassette value of the REV tape path satisfies the specification.

**Specification:**

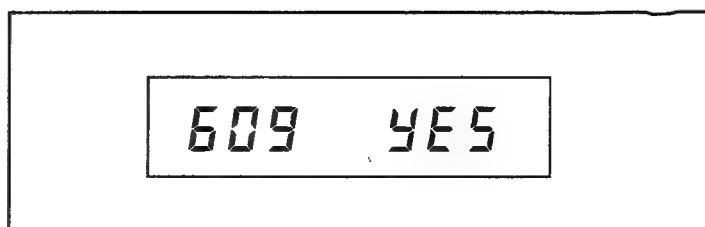
REV rewinding torque:  $0.0010 \pm 0.0001 \text{ N}\cdot\text{m}$   
( $10 \pm 1 \text{ g}\cdot\text{cm}$ )

If it does not, perform the following adjustment.

- When the torque value is towards the + side:  
Press the REW key and adjust so that the torque value is within the specification.
- When the torque value is towards the – side:  
Press the FF key and adjust so that the torque value is within the specification.

28. Press the EJECT key, and remove the torque cassette.

29. Check that the display window is as shown in the figure.



## 6-39. FWD Back Tension Check/Adjustment

Reel table position: Standard cassette position  
Mode: PLAY

• Tool:

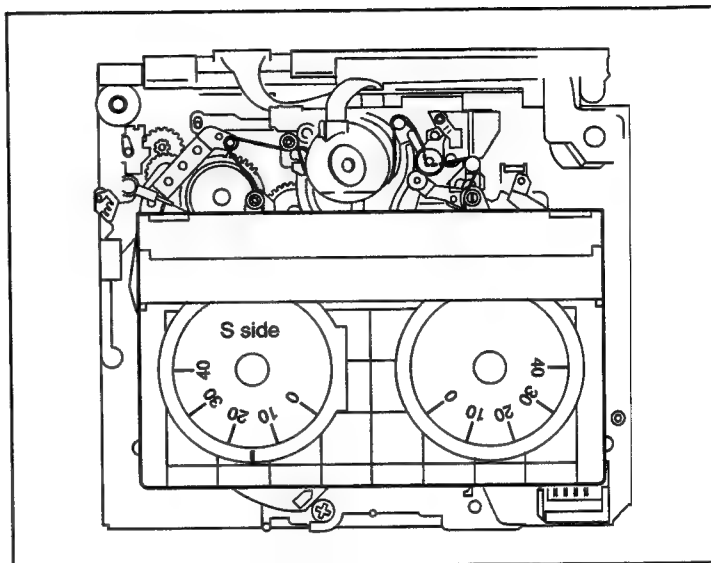
Torque cassette: J-6082-373-A

1. Remove the cassette compartment.  
(Refer to Section 6-2.)
2. Set the torque cassette.
3. Hold the torque cassette gently so that it does not rise, run the tape, and check that the FWD back tension torque value (S side) satisfies the specification.

**Specification:**

FWD back tension torque:

0.0011 to 0.00145 N·m  
(11 to 14.5 g·cm)



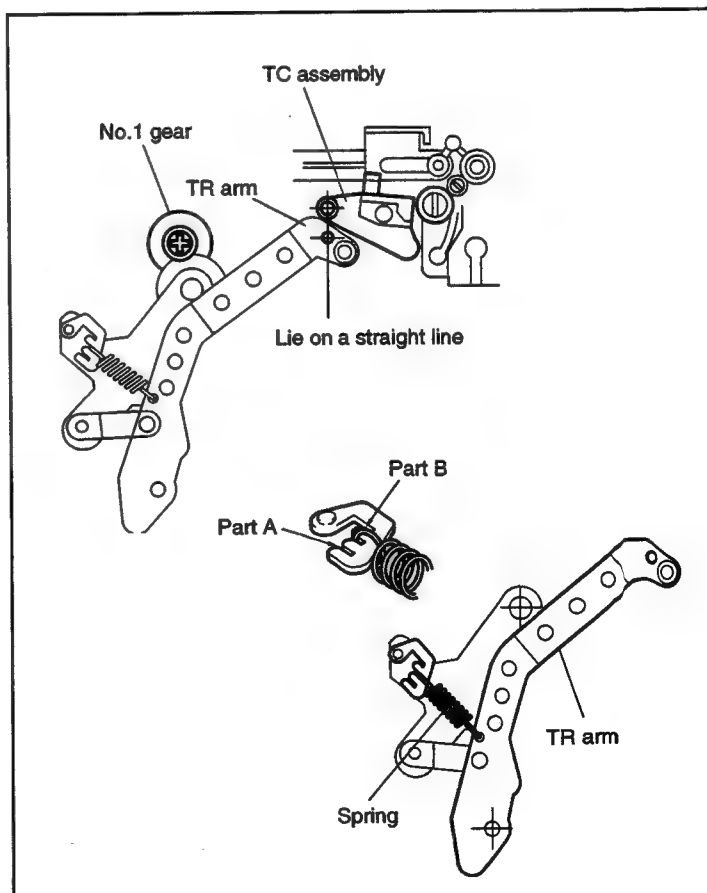
If it does not, perform the following adjustment.

- 1) Press the EJECT key, and remove the tape.
- 2) Rotate the No.1 gear, load the TR arm, and adjust so that the TR arm hole and TC assembly shaft hole shown in the figure lie on a straight line.

• When the torque value is towards the + side:  
Re-hook the spring at part A.

• When the torque value is towards the - side:  
Re-hook the spring at part B.

4. Perform step 3 again, and check that the torque value satisfies the specification.





## 6-40. TR Arm Assembly Position Check/Adjustment

Reel table position: Mini cassette position  
Mode: PLAY

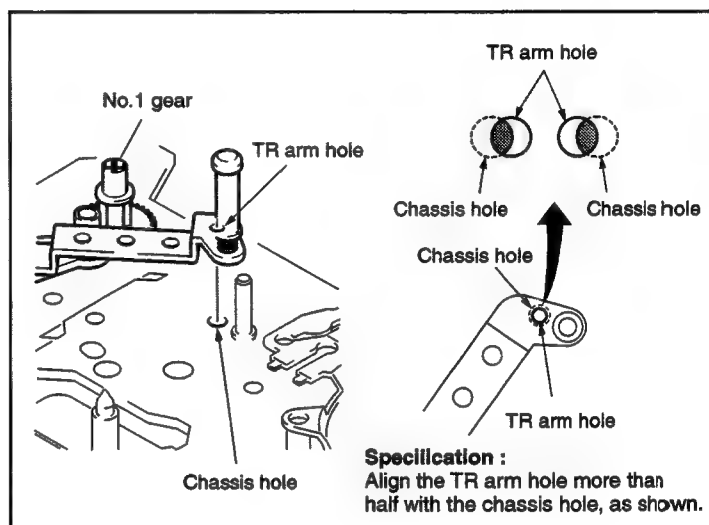
- Tool

Mini cassette tape (commercial product)

1. Run the mini cassette tape (commercial product), and check that the TR arm hole should be aligned more than half with the chassis hole, as shown.

**Specification:**

The TR arm hole should be inside the chassis hole during PLAY mode.

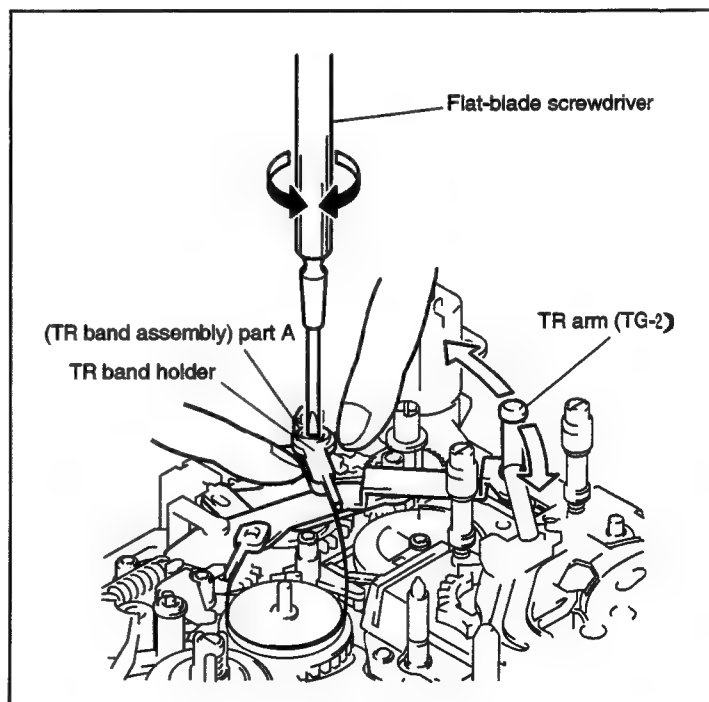


If it is not, perform the following adjustment.

- Insert a flat-blade screwdriver into part A of the TR band assembly shown in the figure, rotate it in the clockwise or counterclockwise directions to adjust it.

**Notes**

- When performing the adjustment, hold the TR band holder so that it does not rotate.
- Never touch the tape.



## Section 7

### Tape Path Alignment

#### 7-1. General Information for Tape Path Alignment

##### 7-1-1. Equipment and Tools Used

- Oscilloscope (Tektronix 2445B or equivalent)
- Guide adjustment driver (SONY Part No. J-6082-362-A)
- Small adjustment mirror (SONY Part No. J-6080-710-A)
- RF extension tool (SONY Part No. J-6442-350-A)
- Alignment tape, XH2-1AST (for DSR-390/390P/370/370P, SONY Part No. 8-967-999-02)
- Alignment tape, XH5-1A (for DSR-390/370, SONY Part No. 8-967-999-21)
- Alignment tape, XH5-1AP (for DSR-390P/370P, SONY Part No. 8-967-999-25)
- Blanking tape (commercially available tape, SONY PDVM-40ME or equivalent)
- Three bond 1401B

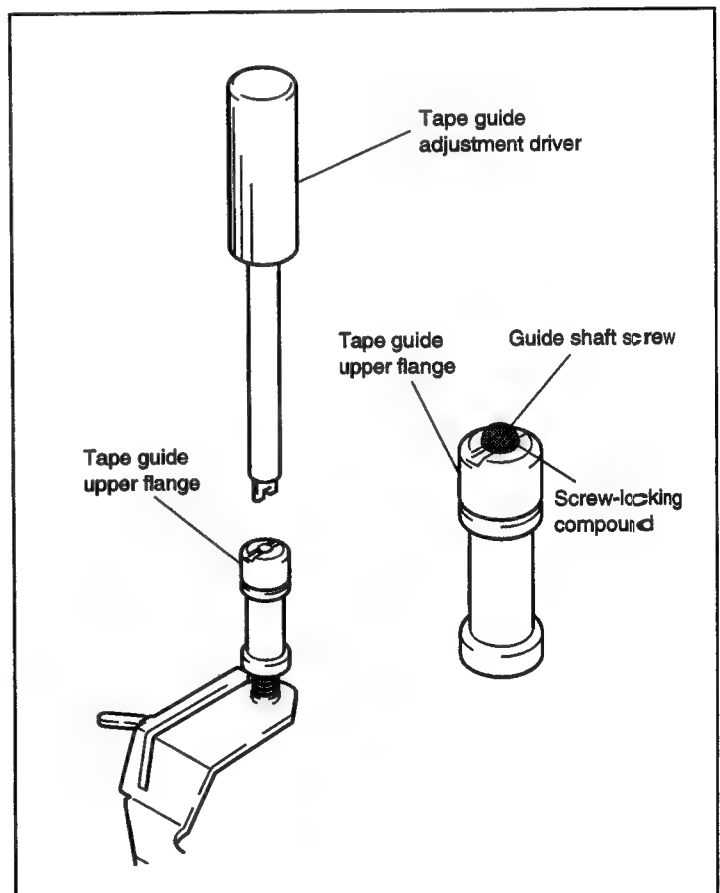
##### 7-1-2. Tape Guide Adjustment Driver and Locking Screw

- (1) When performing the height adjustment of each tape guide, use the tape guide adjustment driver as a service tool.
- (2) Adjust the heights of TG-1, TG-2, TG-3, TG-7 and TG-8 guides, then apply a screw-locking compound to the locking screw of the upper flange of the tape guide.

	SONY Part No.
Tape guide adjustment driver	J-6082-362-A
Three Bond 1401B	7-432-114-11

##### Precaution on applying a screw-locking compound:

- Do not apply a screw-locking compound to a face which is in contact with tape.



### 7-1-3. Tape Path Adjustment Preparations

#### (1) Cassette Compartment

Attach the cassette compartment when performing tape path adjustments. This will enable adjustments to be performed more accurately.

#### (2) Cleaning

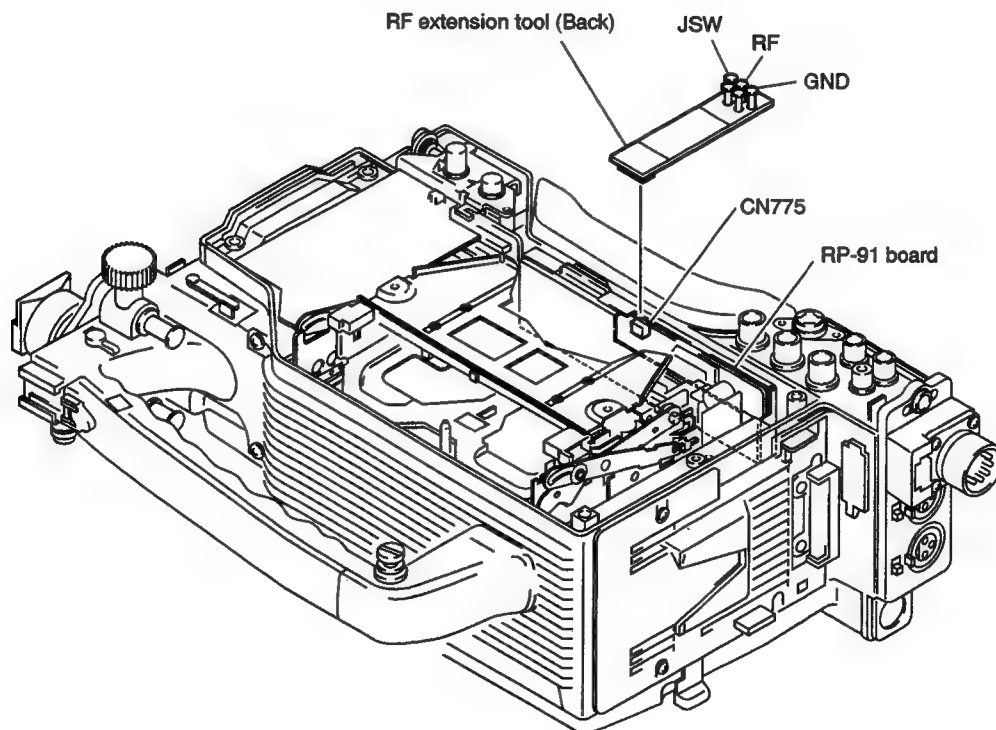
Clean faces that are in contact with tape. For how to clean them, refer to Section 5-4.

### 7-1-4. Connection

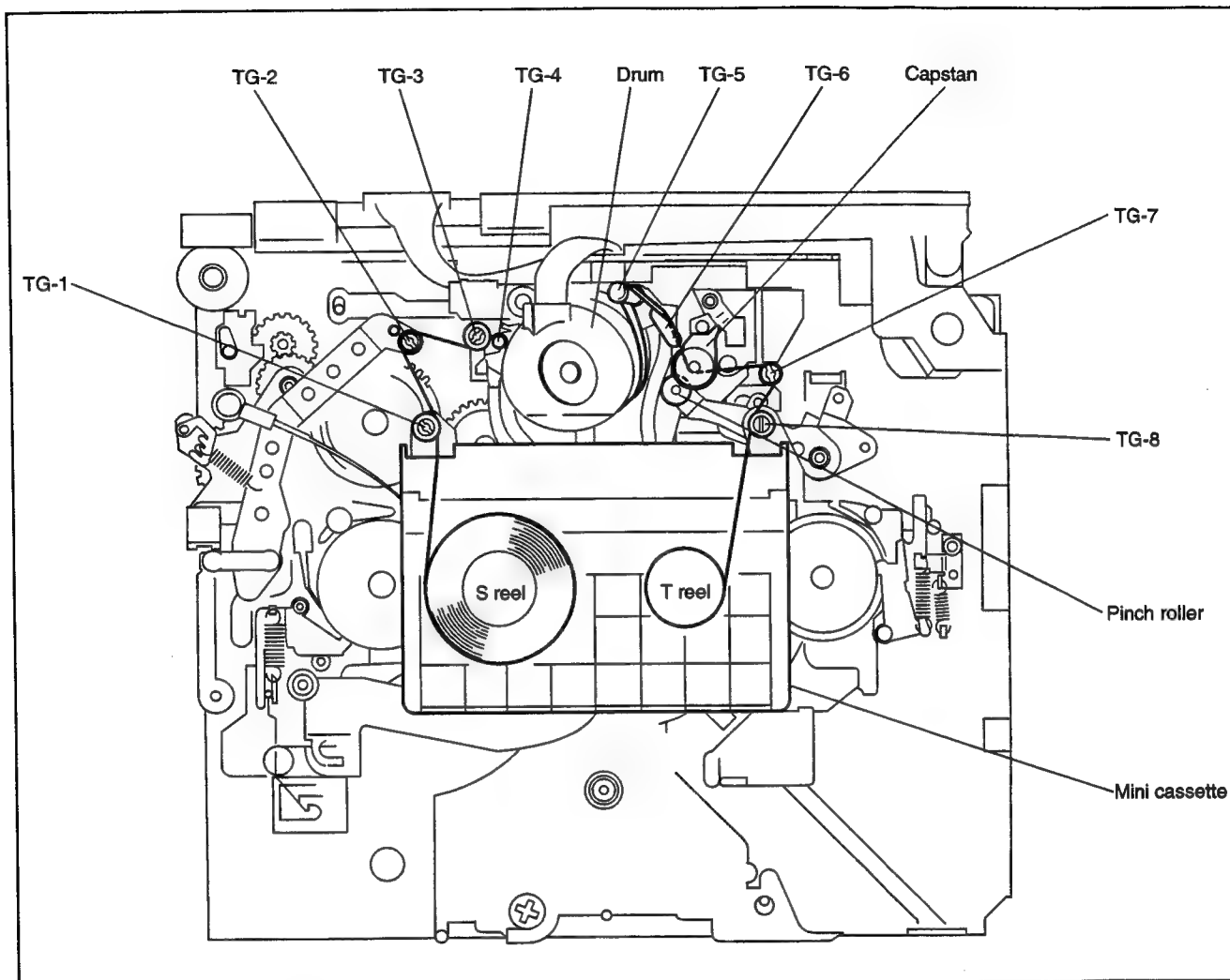
#### RF extension tool

Tool which can extract signals output from connector CN775 of the RP-91 board and can be connected easily to the probe.

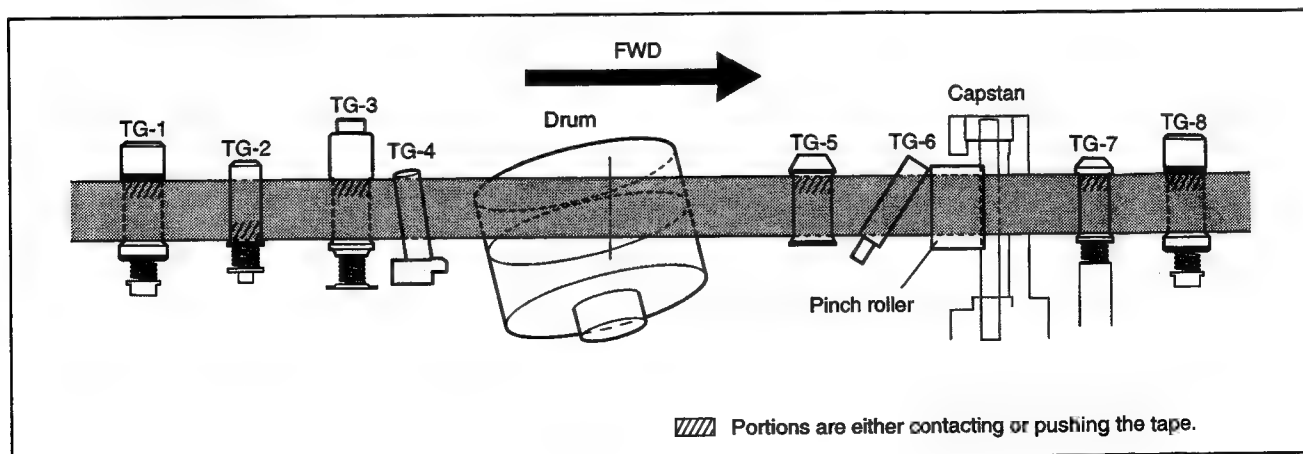
Insert the RF extension tool board into CN775 of the RP-91 board.



### 7-1-5. Drum and Tape Guide Positions



### 7-1-6. Tape Path State



## 7-2. Initial Setting

The tape path system adjustment is performed by setting the following maintenance menu.

No. 604 tracking adjustment:

Performs recording and playback in the central ITI mode.

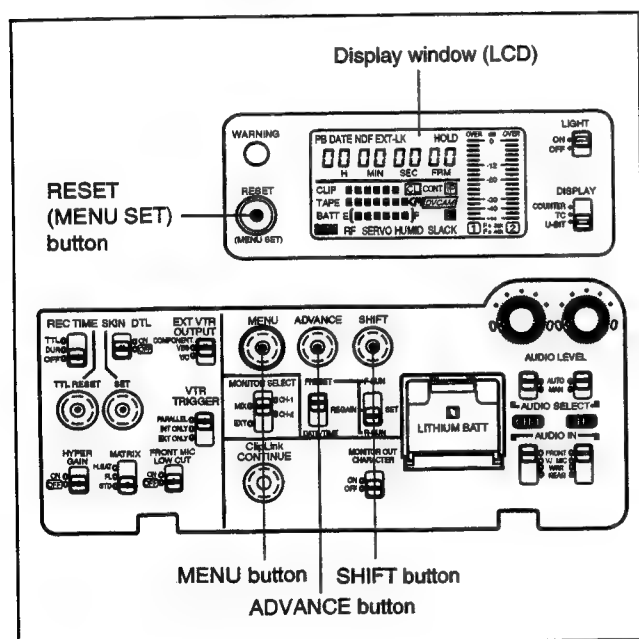
### Note

ITI mode is effective only when the power is ON. When the power is turned OFF, it is automatically set to OFF.

No. 605 switching position adjustment:

Performs automatic adjustment of the switching position. (Refer to Section 7-6 for how to set menu No.605 "Switching position adjustment.")

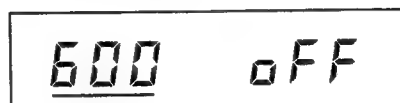
### The method of setting menu No. 604



1. Set the maintenance menu, and select Menu No. 601.

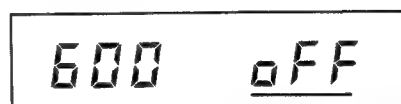
(1) Press the MENU button while pressing the SHIFT button, then release the SHIFT button first, and release the MENU button after more than 1 second.

The display window (LCD) will display as follows. (Characters underlined on the display window (LCD) in the description of operations hereafter indicate that they are blinking.)



(2) Press the RESET (MENU SET) button once so that "oFF" blinks.

The display window (LCD) will display as follows.



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

(3) Press the ADVANCE button once, and select "on."

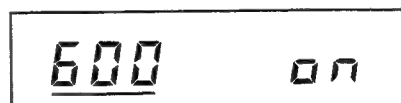
The display window (LCD) will display as follows.



Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

(4) Press the RESET (MENU SET) button once.

The display window (LCD) will display as follows.



Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button once to display Menu No. 604.

The display window (LCD) will display as follows.



Each time the ADVANCE button is pressed, Menu Nos. are changed as follows.

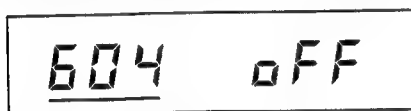
600 → 601 → 603 → ... → 513 → 600 → 601 → ...

Each time the SHIFT button is pressed, Menu Nos. are changed as follows.

600 → 513 → 509 → ... → 601 → 600 → 513 → ...

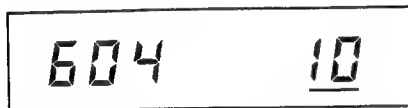
2. Press the RESET (MENU SET) button.

The display window (LCD) will display as follows.



3. Press the ADVANCE button to select "10."

(Each time the ADVANCE button is pressed, "oFF → 10 → 5 → 20 → oFF" is repeatedly displayed.)



4. Press the RESET (MENU SET) button.

"604" will blink and the mode is set.

## 7-3. Tracking Adjustment

### Equipment and Tools

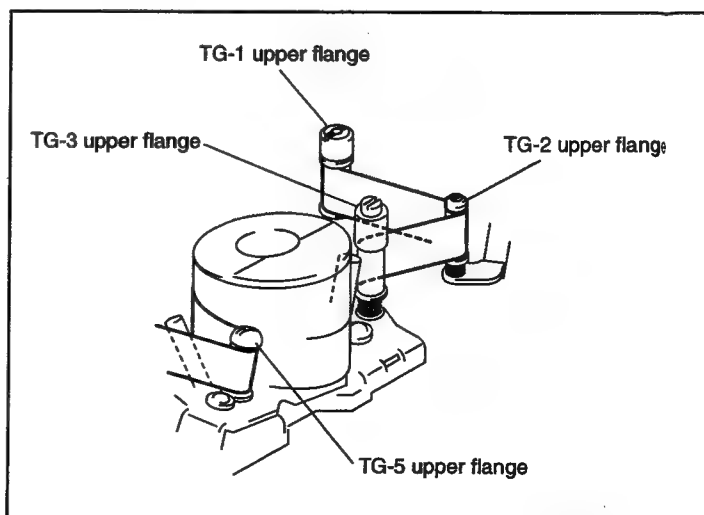
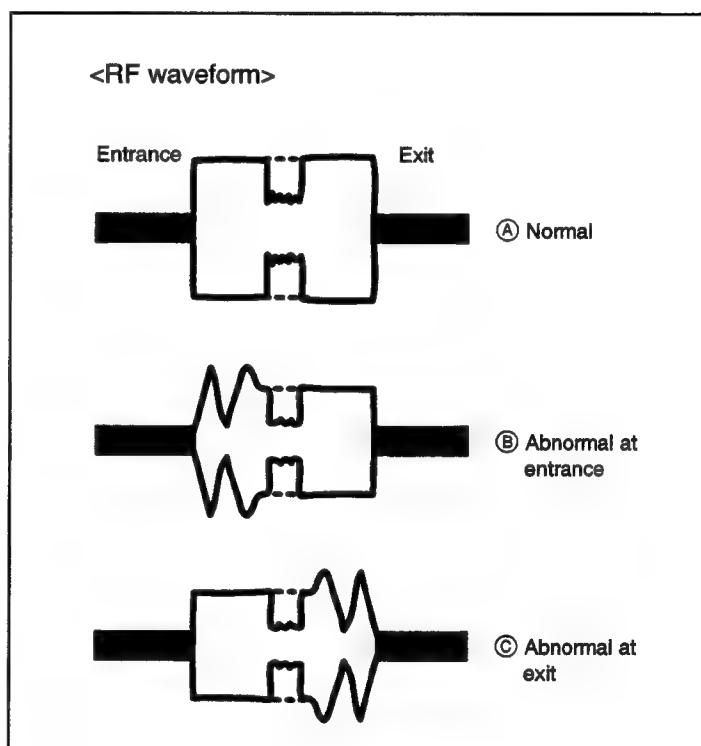
- Alignment tape, XH2-1AST
- RF extension tool
- Oscilloscope

### Setting

1. Connect the RF extension tool to CN775 of RP-91 board.
2. Connect the oscilloscope as follows.  
CH1: RF/RF extension tool (RF waveform)  
CH2: JSW/RF extension tool (Switching waveform)  
Trigger: CH2
3. Select maintenance menu No. 604-10, center ITI mode for tracking adjustment.  
(Refer to Section 7-2.)
4. Insert an alignment tape into the unit.

#### 7-3-1. Tracking Rough Adjustment

1. Put the unit in PLAY mode.
2. Check that the tape runs along the TG-2 lower flange, TG-3 upper flange, TG-5 upper flange and TG-7 upper flange. (Refer to Section 8-1-6. Tape Path State.)  
Then, check that there are no curls formed on the TG-1 and TG-8 upper flanges.  
(At this time, the tape need not along the TG-1 and TG-8 upper flanges.)
3. Check that both the RF waveforms at both the entrance and exit are flat on the oscilloscope.
4. If RF waveform does not flat, rotate the TG-3 and TG-5 upper flanges, and adjust so that it becomes flat.



### 7-3-2. TG-1, TG-2, TG-3 and TG-5 Guides Adjustment

#### Equipment and Tools

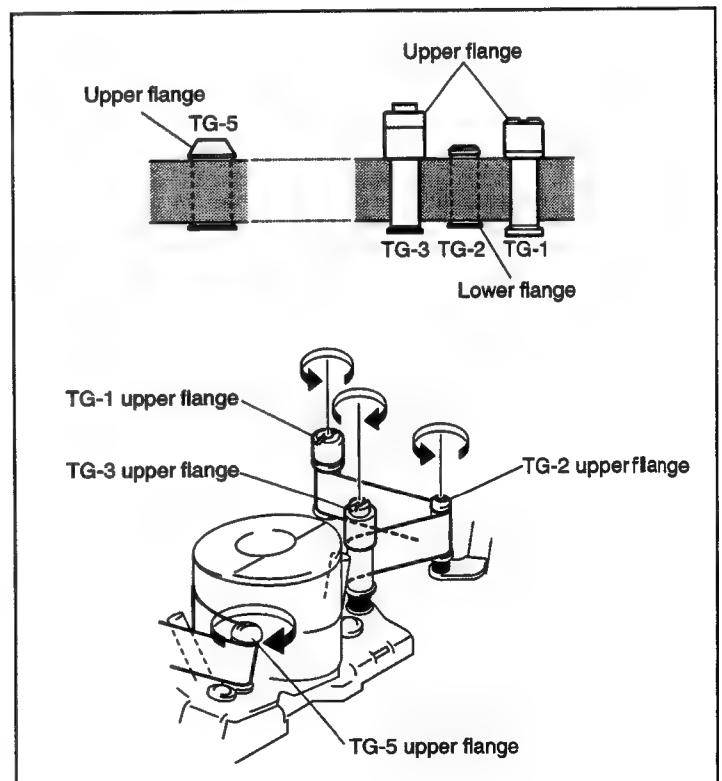
- Alignment tape, XH2-1AST
- RF extension tool
- Oscilloscope

#### Setting

1. Connect the RF extension tool to CN775 of RP-91 board.
2. Connect the oscilloscope as follows.  
CH1: RF/RF extension tool (RF waveform)  
CH2: JSW/RF extension tool (Switching - waveform)  
Trigger: CH2
3. Select maintenance menu No. 604-10, center ITI mode for tracking adjustment.  
(Refer to Section 7-2.)
4. Insert an alignment tape into the unit.

#### Adjusting Method

1. Put the unit in PLAY mode.
2. Check that there are no curls formed on the TG-1 upper flange.  
If curled, rotate the upper flange in the counterclockwise direction, and adjust so that remove the curls.
3. Check that the tape runs along the TG-2 lower flange (no space between the two).  
If it does not, rotate the upper flange in the counterclockwise direction, and adjust so that it normally runs along the TG-2 lower flange.
4. Check that the tape runs along the TG-3 upper flange (no space between the two).  
If it does not, rotate the adjustment nut in the clockwise direction, and adjust so that it normally runs along the TG-3 upper flange.
5. Check that the tape runs along the TG-5 upper flange (no space between the two). If it does not, rotate the upper flange in the clockwise direction, and adjust so that it normally runs along the TG-5 upper flange.





### 7-3-3. TG-7 and TG-8 Guides Adjustment

#### Equipment and Tools

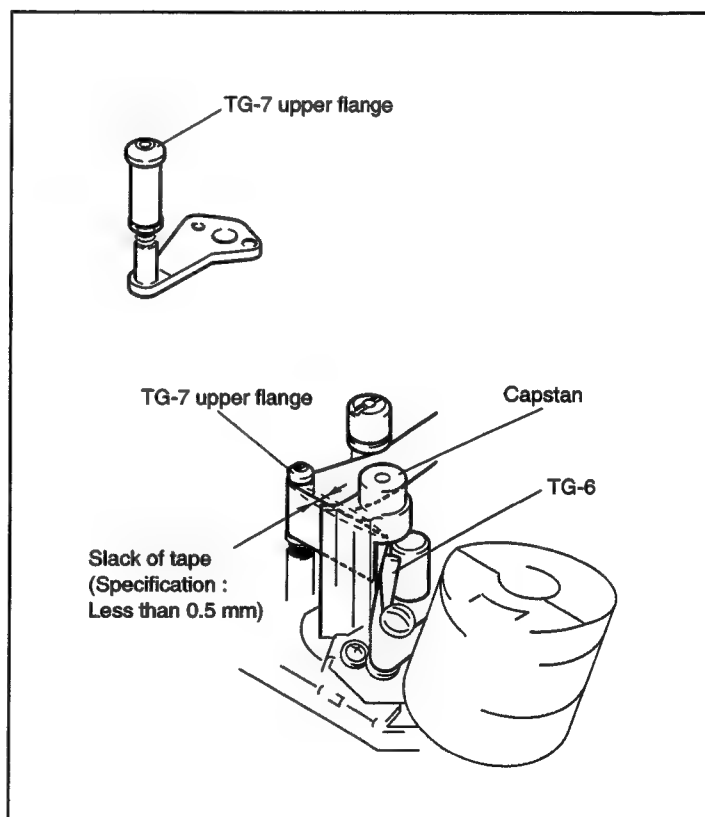
- Alignment tape, XH2-1AST
- RF extension tool
- Oscilloscope

#### Setting

1. Connect the RF extension tool to CN775 of RP-91 board.
2. Connect the oscilloscope as follows.  
CH1: RF/RF extension tool (RF waveform)  
CH2: JSW/RF extension tool (Switching waveform)  
Trigger: CH2
3. Select maintenance menu No. 604-10, center ITI mode for tracking adjustment.  
(Refer to Section 7-2.)
4. Insert an alignment tape into the unit.

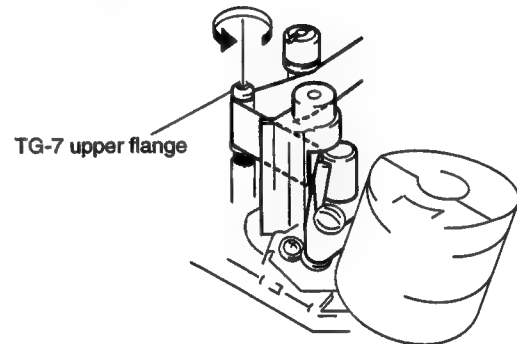
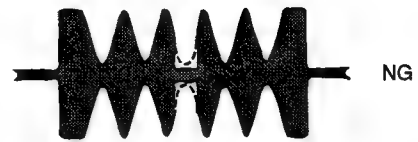
#### Adjusting Method

1. Put the unit in PLAY mode.  
Check that the slack of the tape between the capstan and the TG-7 upper flange satisfies the specification.  
If it does not, rotate the TG-7 upper flange, and adjust so that the tape does not slack.

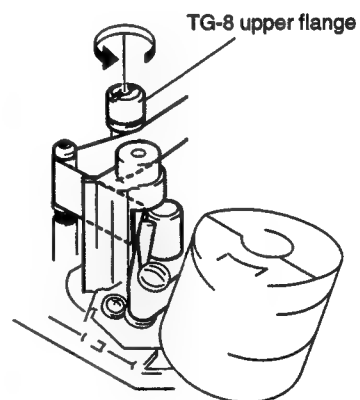


2. Put the unit in REVsearch mode.  
Check the RF waveform at the exit.  
If RF waveform is no good, rotate the TG-7 upper flange in the counterclockwise direction by 90°, and perform steps 1 and 2 again.

<RF waveform>



3. Put the unit in REV search mode. Check that no curls are formed on the TG-8 upper flange.  
If curls are formed, rotate the TG-8 upper flange in the counterclockwise direction and remove the curls.



### 7-3-4. Tracking Adjustment

#### Equipment and Tools

- Alignment tape, XH2-1AST
- RF extension tool
- Oscilloscope

#### Setting

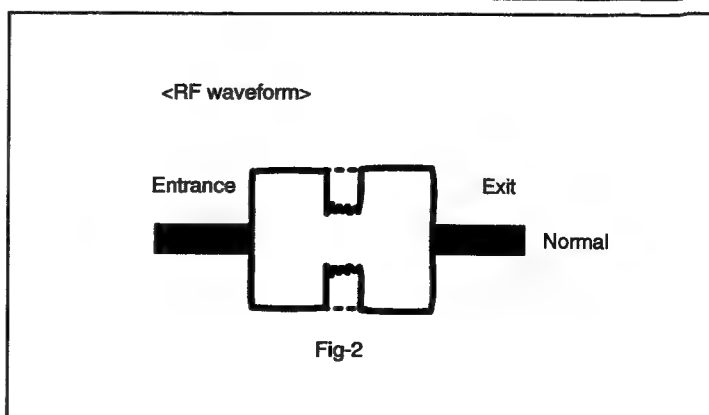
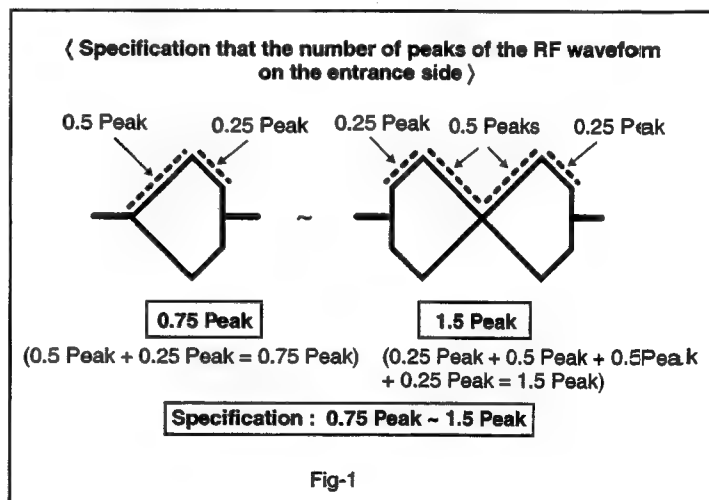
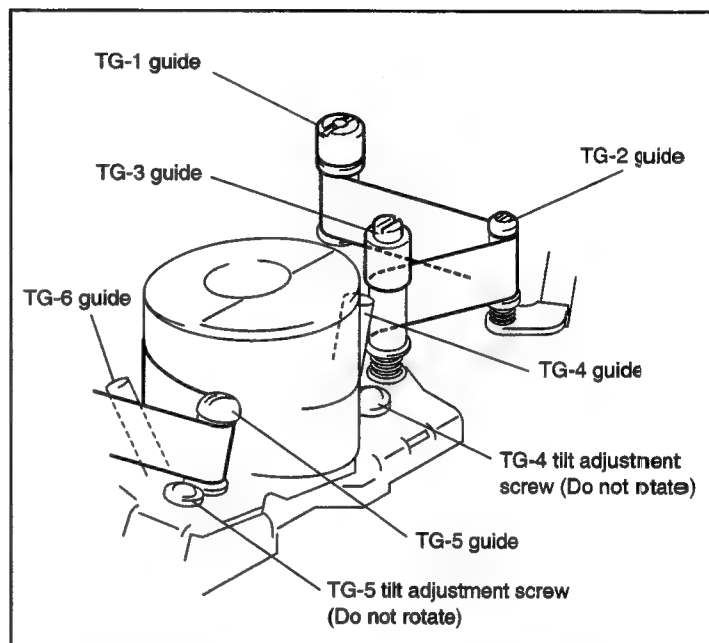
1. Connect the RF extension tool to CN775 of RP-91 board.
2. Connect the oscilloscope as follows.  
CH1: RF/RF extension tool (RF waveform)  
CH2: JSW/RF extension tool (Switching waveform)  
Trigger: CH2
3. Select maintenance menu No. 604-10, center ITI mode for tracking adjustment.  
(Refer to Section 7-2.)
4. Insert an alignment tape into the unit.

#### Adjusting Method

1. Put the unit in PLAY mode.
2. Rotate the upper flange of the TG-3 guide and adjust the RF waveform on the entrance side becomes flat.
3. Rotate the upper the flange of the TG-3 guide in the counterclockwise direction by 180°, and check to see that the number of peaks of the RF waveform on the entrance side meets the specification. (Refer to Fig. 1)
4. If the number of peaks does not meet the specification, perform the following adjustment;  
\*In case the number is 1.5 or more  
Rotate the upper flange of the TG-2 guide in the clockwise direction so that the number of peaks meets the specification.  
\*In case the number is 0.75 or less  
Rotate the upper flange of the TG-2 guide in the counterclockwise direction so that the number of peaks meets the specification.
5. Rotate the upper flange of the TG-3 guide in the clockwise direction and adjust the RF waveform on the entrance side becomes flat. (Refer to Fig. 2)

#### Notes

- Be sure to finish the adjustment by rotating the upper flange of the TG-3 guide in the clockwise direction.



- If rotating the upper flange of the TG-3 guide in the clockwise direction too much, return the upper flange back to the original position and re-start the adjustment. Finish it by rotating the upper flange in the clockwise direction.
6. Rotate the upper flange of the TG-5 guide and adjust the RF waveform on the exit side becomes flat. (Refer to Fig. 2)

#### **Notes**

- Be sure to finish the adjustment by rotating the upper flange of the TG-5 guide in the clockwise direction.
  - If rotating the upper flange of the TG-5 guide in the clockwise direction too much, return the upper flange back to the original position and re-start the adjustment. Finish it by rotating the upper flange in the clockwise direction.
  - Do not turn the tilt adjustment screws of the TG-4 and TG-5 guides
7. Put the unit in REV search mode, and check that there are no curls formed at the lower flange of the TG-2 guide. If curled, perform steps (1), (2) and (3) below.
- (1) Rotate the upper flange of the TG-2 guide in the clockwise direction to remove the curls.
  - (2) Rotate the upper flange of the TG-3 guide in the counterclockwise direction by 180°, and check that the number of peaks of the RF waveform on the entrance side meets the specification. (Refer to Fig.1)
  - (3) If not satisfied the specification, perform steps 4 and step 5.

## 7-4. Check after Tracking Adjustment

### Equipment and Tools

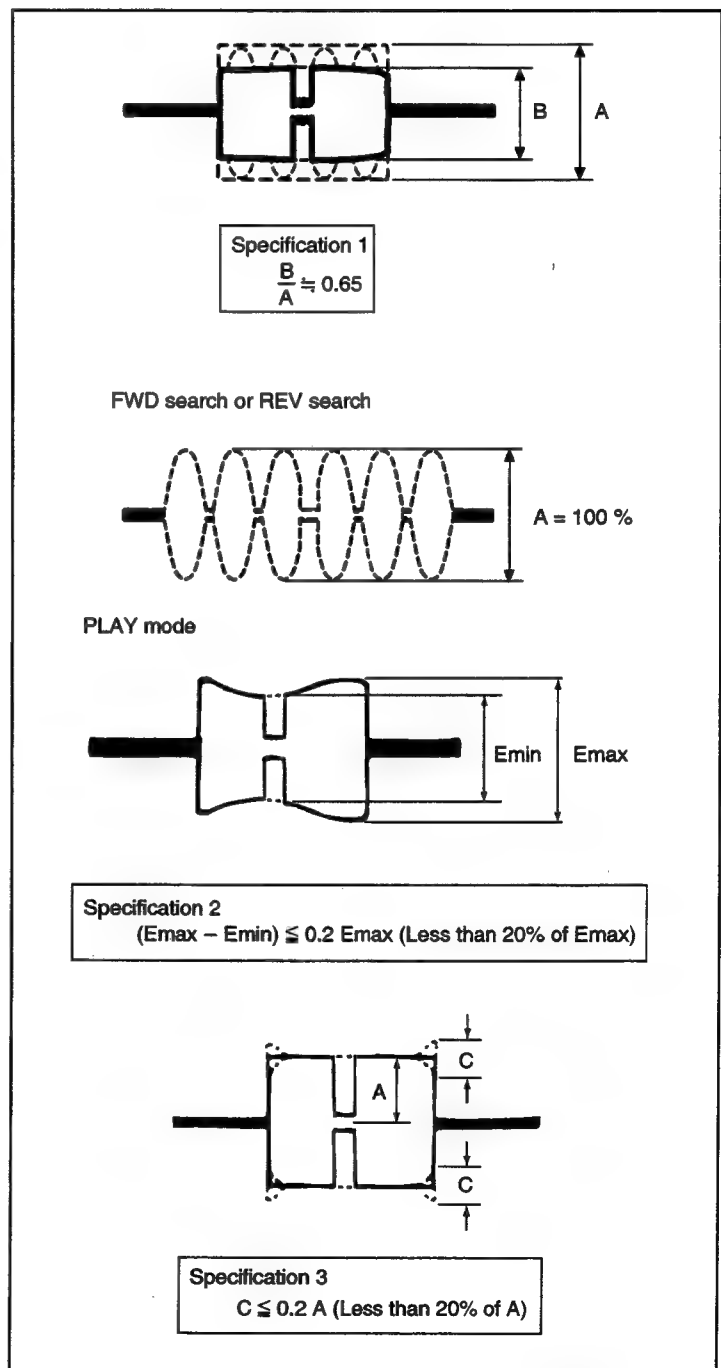
- Alignment tape, XH2-1AST
- RF extension tool
- Oscilloscope

### Setting

1. Connect the RF extension tool to CN775 of RP-91 board.
2. Connect the oscilloscope as follows.  
CH1: RF/RF extension tool (RF waveform)  
CH2: JSW/RF extension tool (Switching waveform)  
Trigger: CH2
3. Select maintenance menu No. 604-10, center ITI mode for tracking adjustment.  
(Refer to Section 7-2.)
4. Insert an alignment tape into the unit.
5. Perform checks Sections 7-4-1 to 7-4-4.

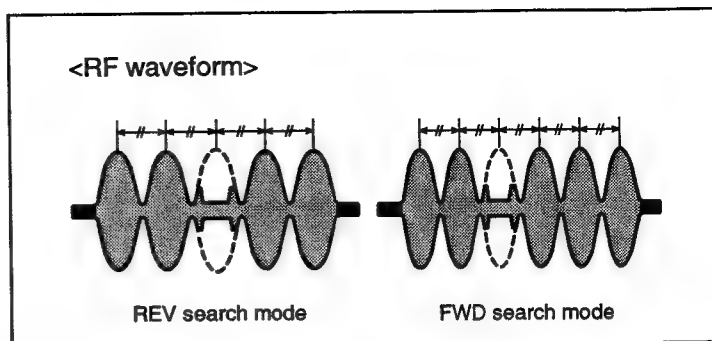
### 7-4-1. Tracking Check

1. Put the unit in FWD search/REV search mode, assuming that the output level of the RF waveform is A (= 100 %).
2. Put the unit in PLAY mode, assuming that the RF waveform output level is B (= 65 %).
3. Check that the A and B levels are Specification 1.
4. Check to see that the difference in the amplitude between Emax and Emin in the PLAY mode is less than 20 % Emax. (Specification 2)
5. Check to see that no significant fluctuations are observed in the waveform. (Specification 3)



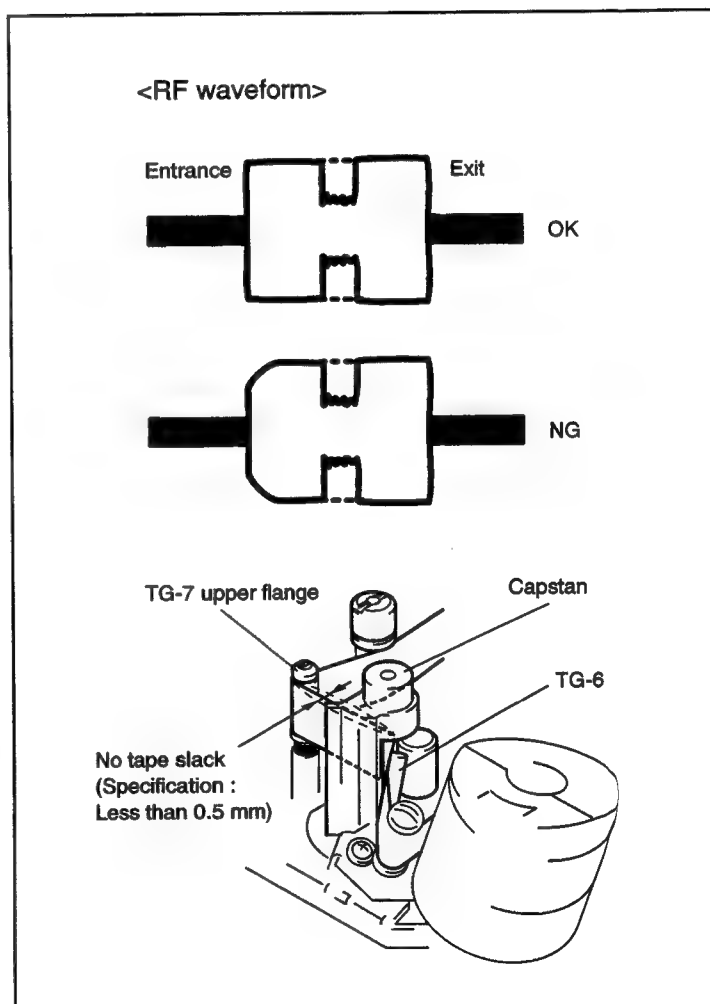
### 7-4-2. FWD Search and REV Search Check

1. Put the unit in REV search mode.  
Check that the pitches of the peaks of the RF waveform are equal.  
If not equal, perform 7-3-4. Tracking Adjustment again.
2. Put the unit in FWD search mode.  
Check that the pitches of the peaks of the RF waveform are equal.  
If not equal, perform 7-3-4. Tracking Adjustment.



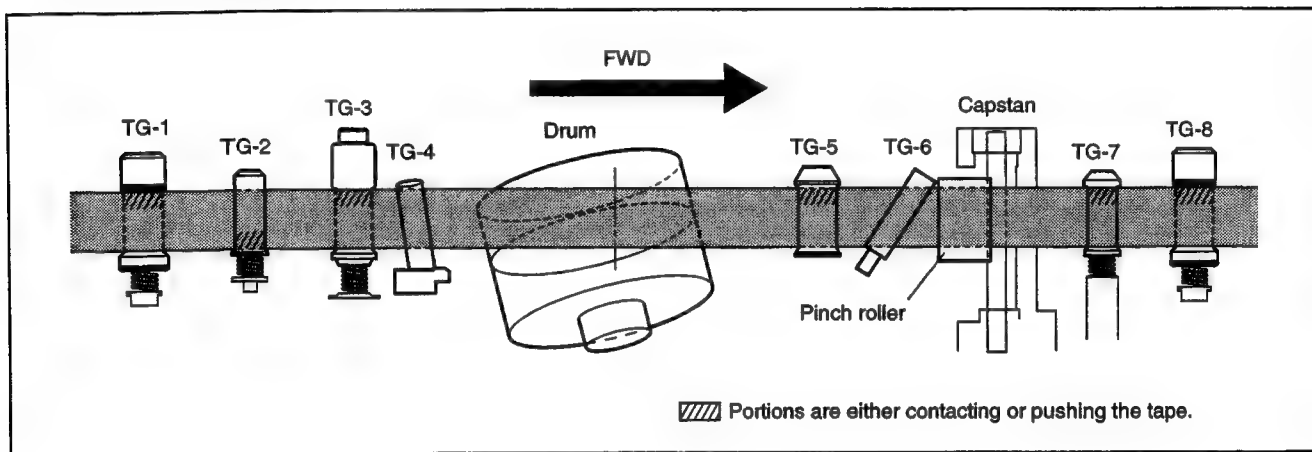
### 7-4-3. Rising Check

1. When the mode changed to PLAY mode from STOP mode, check that the RF waveform rises horizontally within three seconds (from when the RF waveform appears on the oscilloscope).  
Check that the tape does not slack near the capstan at this time.
2. When the PLAY mode is set after the FWD search/REV search mode, and FF/REW mode, check that the RF waveform rises horizontally within three seconds. Check that the tape does not slack near the capstan at this time.



#### 7-4-4. Tape Path Check

1. Put the unit in FWD search/REV search mode, and check that there are no large curls on the TG-1 upper flange, TG-2 lower flange, TG-3 upper flange, TG-5 upper flange, TG-7 upper flange, and TG-8 upper flange.



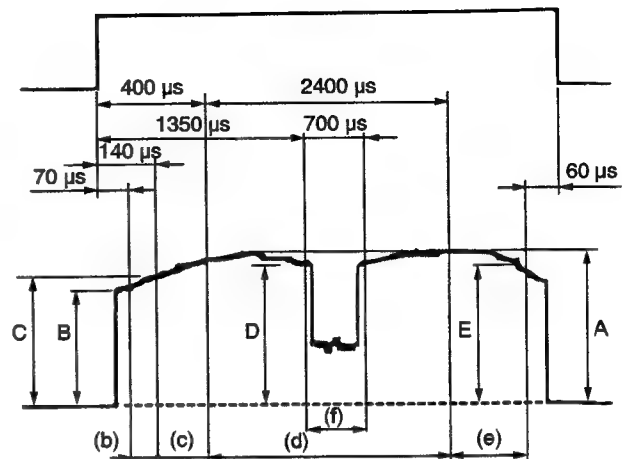
## 7-5. Check of Self-Recording Tape Playback

### Equipment and Tools

- RF extension tool
- Blanking tape
- Oscilloscope
- Alignment tape, XH2-1AST

### Setting

1. Connect the RF extension tool to CN775 of RP-91 board.
2. Connect the oscilloscope as follows.  
CH1: RF/RF extension tool (RF waveform)  
CH2: JSW/RF extension tool (Switching waveform)  
Trigger: CH2
3. Insert the blanking tape into the unit.
4. Select maintenance menu No. 604-10, center ITI mode for tracking adjustment.  
(Refer to Section 7-2.)
5. Put the unit in REC mode, and record the center ITI 10 MHz single signal to the tape from the top for three to ten minutes.



#### Specification

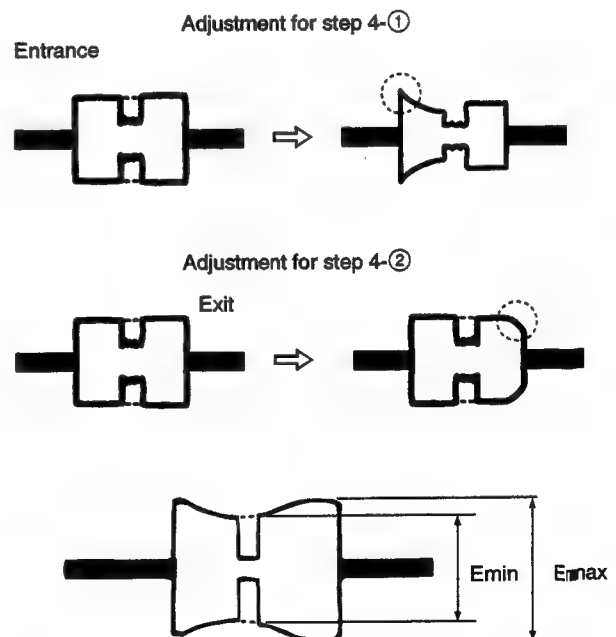
- $B \geq 0.65 A$
- $C \geq 0.75 A$
- $D \geq 0.8 A$
- $E \geq 0.75 A$

- Overall max. value : A
- Min. value between sections (b) : B
- Min. value between sections (c) : C
- Min. value between sections (d) : D (Excluding between sections (f))
- Min. value between sections (e) : E

Fig-1

### Checking Method

1. Put the unit in PLAY mode and playback the portion recorded in the setting step 5.
2. Check that the tape runs along the TG-2 lower flange, the TG-3 upper flange, the TG-5 upper flange, and the TG-7 upper flange, and that no curls are found on the TG-1 upper flange, and the TG-8 upper flange. (Refer to Sections 7-1-5 and 7-1-6.)
3. Verify that the RF waveform on the oscilloscope meets the specification. (Refer to Fig. 1)
4. If the RF waveform does not meet the specification, re-perform the adjustments, Section 7-3 Tracking Adjustment, and the following ① and ②.
  - ① In case that the RF waveform on the entrance side does not meet the specification during self-recording tape playback (Refer to Fig. 1)
    - Adjust the RF waveform on the entrance side to become flat by performing the tracking adjustment, and raise the RF waveform on the entrance side within the specification by rotating the flange of the TG-3 guide in the counterclockwise direction. (Refer to Fig. 2)



#### Specification

$$(E_{\max} - E_{\min}) \leq 0.2 E_{\max} \text{ (Less than 20\% of } E_{\max}\text{)}$$

Fig-2



- ② In case that the RF waveform on the exit side does not meet the specification during self-recording tape playback (Refer to Fig. 1)
- Adjust the RF waveform on the exit side to become flat by performing the tracking adjustment, and lower the RF waveform on the exit side within the specification by rotating the flange of the TG-5 guide in the clockwise direction. (Refer to Fig. 2)
5. Put the unit in REC mode, and record the center ITI 10 MHz single signal to the tape from the top for three to ten minutes.
  6. Put the unit in PLAY mode, and playback the portion recorded in the setting step 5.
  7. Check that the tape runs along the TG-2 lower flange, the TG-3 upper flange, the TG-5 upper flange, and the TG-7 upper flange, and that no curls are found on the TG-1 upper flange, and the TG-8 upper flange. (Refer to Sections 7-1-5 and 7-1-6.)
  8. Check that the RF waveform meets the specification on the oscilloscope. (Refer to Fig-1)

## 7-6. Switching Position Adjustments

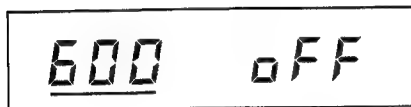
### Tools

Alignment tape XH5-1A (for DSR-390/370)

Alignment tape XH5-1AP (for DSR-390P/370P)

### Checking Method

1. Check that there is no tape in the unit.
2. Set the maintenance menu, and select Menu No. 607.
- (1) Press the MENU button while pressing the SHIFT button, then release the SHIFT button first, and release the MENU button after more than 1 second.  
The display window (LCD) will display as follows.  
(Characters underlined on the display window (LCD) in the description of operations hereafter indicate that they are blinking.)



- (2) Press the RESET (MENU SET) button once so that "oFF" blinks.  
The display window (LCD) will display as follows.



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once, and select "on."  
The display window (LCD) will display as follows.



Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

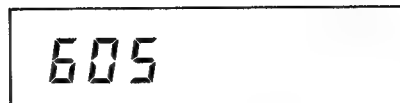
- (4) Press the RESET (MENU SET) button once.  
The display window (LCD) will display as follows.



Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button or SHIFT button to display Menu No. 605.

The display window (LCD) will display as follows.



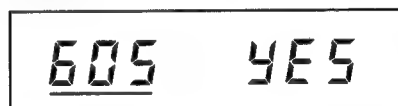
Each time the ADVANCE button is pressed, Menu Nos. are changed as follows.

600 → 601 → 603 → ... → 513 → 600 → 601 → ...

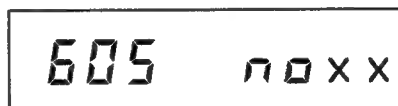
Each time the SHIFT button is pressed, Menu Nos. are changed as follows.

600 → 513 → 509 → ... → 601 → 600 → 513 → ...

3. Press the RESET (MENU SET) button.
4. Insert the alignment tape XH5-1A/XH5-1AP into the unit. An adjustment is automatically performed, and after the completion of the adjustment, the tape is automatically ejected.
5. Check that the display window (LCD) displays as follows.



If the display window (LCD) displays as follows, exit menu No. 605 once, and perform after step 3 again.  
If the problem is still not solved on the display window (LCD), check if the unit is failure or not.



XX: 30 → Servo lock can not be executed in the playback.

31 → Cannot read adjustment data.

E0 → Cannot save data.

Fd → Menu not supported.

FE → Adjustment prohibited (E.g.: Tape loaded).

<Items to be checked>

- Has the tape path adjustment been performed correctly?
- Is a head clogged?

6. Press the MENU button to exit the maintenance menu.  
The display window (LCD) will return to the state before the maintenance menu was displayed.

## Section 8

### General Information for Electrical Alignment

#### 8-1. Adjusting Items

##### AA-104 Board

RV501 TONE Level Adjustment ..... 9-3-15

##### AT-150 Board

CV502 Character Size Adjustment ..... 9-3-1

##### ES-31 Board

FL101 Chroma Phase Adjustment ..... 9-3-7

RV101 Chroma (VBS) Level Adjustment ..... 9-3-7

RV103 B-Y Level Adjustment ..... 9-3-7

RV104 Y (VBS) Level Adjustment ..... 9-3-8

##### FP-118A Board

CV200 Clock Frequency Adjustment ..... 10-1-1

RV401 CH-1 Audio Level Volume  
Reference Position Adjustment ..... 10-4-1

RV402 CH-2 Audio Level Volume  
Reference Position Adjustment ..... 10-4-1

RV403 Limiter Level Adjustment ..... 10-4-3

RV601 CH-1 Monitor Output Level  
(LINE OUT Level) Adjustment ..... 10-4-2

RV602 CH-2 Monitor Output Level  
(LINE OUT Level) Adjustment ..... 10-4-2

##### PA-205 (B) Board

RV1 CCD OUT Level Adjustment ..... 9-3-10

##### PA-207 (R) Board

RV1 CCD OUT Level Adjustment ..... 9-3-10

##### Service Menu

###### PAGE 2

R W.SHAD ..... 9-3-13

G W.SHAD ..... 9-3-13

B W.SHAD ..... 9-3-13

###### PAGE 3

R FLARE ..... 9-3-14

G FLARE ..... 9-3-14

B FLARE ..... 9-3-14

###### PAGE 5

Y LEV ..... 9-3-5

R-Y LEV ..... 9-3-5

B-Y LEV ..... 9-3-5

SYNC LEV ..... 9-3-5

SET UP LEV .. 9-3-5,8  
(NTSC)

###### PAGE 6

Y CLP ..... 9-3-4

R-Y CLP ..... 9-3-4

B-Y CLP ..... 9-3-4

###### PAGE 7

R-Y C/B ..... 9-3-6

R-Y BST ..... 9-3-7

B-Y C/B ..... 9-3-6

B-Y BST ..... 9-3-7

VF SYNC ..... 9-3-9

VF BLKG ..... 9-3-9

###### PAGE 8

SC FREQ ..... 9-3-2

SC-H ..... 9-3-3

###### PAGE 9

VTR R-Y ..... 10-5-5

VTR B-Y ..... 10-5-6

VTR Y ..... 10-5-2

B-Y DELAY ... 10-5-3

R-Y DELAY ... 10-5-4

###### PAGE 10

VTR SYNC ..... 10-5-1

VTR BST ..... 10-5-7

PB VBS ..... 10-5-8

EE S-Y ..... 10-5-9

EE S-C ..... 10-5-10

###### PAGE 11

SETUP ..... 9-3-4,8  
(NTSC)

MAT DEST ..... 9-3-8  
(NTSC)

COMP LEV .... 9-3-8  
(PAL)

###### PAGE 12

TEST ..... 9-3-4, 5

R-Y ..... 9-3-4, 5

B-Y ..... 9-3-4, 5

###### PAGE 17

M.BLACK ..... 9-3-11,  
9-4-1

M.GAMMA .... 9-4-1

###### PAGE 18

WHT CLIP ..... 9-4-2

###### PAGE 27

R D.DARK ..... 9-3-12

G D.DARK ..... 9-3-12

B D.DARK ..... 9-3-12

##### File Menu

###### PAGE 6

M.KNEE P ..... 9-4-2

M.KNEE S ..... 9-4-2

## 8-2. Equipment and Tools Required

### Equipment

Oscilloscope:	Tektronix 2445B (200 MHz) or equivalent
Frequency counter:	Iwasaki SC-7102 or equivalent
Vectorscope	
Waveform monitor:	Tektronix 1765 or equivalent
Monochrome monitor:	Sony PVM-91/122 or equivalent
Color monitor:	Sony PVM-1320 or equivalent
Audio signal generator:	Hewlet Packard HP8904 or equivalent
Audio level meter:	Hewlet Packard HP3400A or equivalent

### Tools

Pattern box:	PTB-500, Sony Part No. J-6029-140-B
Grayscale chart:	Sony Part No. J-6026-130-B
DC power supply:	Sony CMA-8A/8ACE or AC-550/550CE
Extension board:	EX-622, Sony Part No. J-6276-320-A
Tripod adaptor:	Sony VCT-U14
Blank tape:	Sony DVM30ME, DVM30NME or equivalent
Alignment tape:	For DSR-390/370: XH5-1A, Sony Part No. 8-967-999-21 For DSR-390P/370P: XH5-1AP, Sony Part No. 8-967-999-25
S-BNC video cable:	Sony Part No. J-6381-380-A

# **Contents of Alignment Tape for DSR-390/370: XH5-1A**

VIDEO	TIME CODE (h) (m) (s)	REC (sec.)	AUDIO	
Black burst	23 : 59 : 00	60	No signal	
75 % full color bars	00 : 00	60	1 kHz	
60 % multi burst	01 : 00	60	20 Hz	
Bowtie with mod 12.5T	02 : 00	30	14.5 kHz	
Shallow ramp	02 : 30	30	10 kHz	
	03 : 00	30	No signal	
Cross hatch (index)	03 : 30	30	1 kHz 0 dBFS	
Line 17	04 : 00	40	1 ch	1 kHz
75 % full color bars	04 : 40	40	2 ch	
Quad phase	05 : 20	40	3 ch	
	06 : 00	40	4 ch	
Black burst	06 : 40	5	No signal	
	06 : 45	5		
60 % multi burst (for composite)	06 : 50	60	1 kHz	
Mod 12.5T	07 : 50	30	20 Hz	
Shallow ramp (B-Y/R-Y OFF)	08 : 20	30	20 kHz	
	08 : 50	30	10 kHz	
Cross hatch (index)	09 : 20	30	1 kHz 0 dBFS	
Chroma noise	09 : 50	30	1 kHz	
Line 17	10 : 20	30		
75 % full color bars	10 : 50	180		
60 % multi burst	13 : 50	60		
Mod 12.5T	14 : 50	30		
Shallow ramp	15 : 20	60		
75 % full color bars	16 : 20	100		
75 % full color bars (R-Y OFF)	18 : 00	180		
75 % full color bars (B-Y OFF)	21 : 00	180		
Blanking marker	24 : 00	180		
Line 17 (R-Y OFF)	27 : 00	180		
Line 17 (B-Y OFF)	30 : 00	180		

\* Audio levels are -20 dBFS (Reference), except 1 kHz 0 dBFS part.

# Contents of Alignment Tape for DSR-390P/370P: XH5-1AP

VIDEO	TIME CODE (h) (m) (s)	REC (sec.)	AUDIO		
Black burst	23 : 59 : 00	60	No signal	32 kHz 4 ch	
100 % full color bars	00 : 00	60	1 kHz		
60 % multi burst	01 : 00	60	20 Hz		
Bowtie with mod 10T	02 : 00	30	14.5 kHz		
Shallow ramp	02 : 30	30	10 kHz		
	03 : 00	30	No signal		
Cross hatch (index)	03 : 30	30	1 kHz 0 dBFS		
Line 17	04 : 00	40	1 ch		1 kHz
100 % full color bars	04 : 40	40	2 ch		
Quad phase	05 : 20	40	3 ch		
	06 : 00	40	4 ch		
Black burst	06 : 40	5	No signal	48 kHz 2 ch	
	06 : 45	5			
60 % multi burst (for composite)	06 : 50	60	1 kHz		
Mod 10T	07 : 50	30	20 Hz		
Shallow ramp (B-Y/R-Y OFF)	08 : 20	30	20 kHz		
	08 : 50	30	10 kHz		
Cross hatch (index)	09 : 20	30	1 kHz 0 dBFS		
Chroma noise	09 : 50	30	1 kHz		
Line 17	10 : 20	30			
100 % full color bars	10 : 50	180			
60 % multi burst	13 : 50	60			
Mod 10T	14 : 50	30			
Shallow ramp	15 : 20	60			
100 % full color bars	16 : 20	100			
100 % full color bars (R-Y OFF)	18 : 00	180			
100 % full color bars (B-Y OFF)	21 : 00	180			
Blanking marker	24 : 00	180			
Line 17 (R-Y OFF)	27 : 00	180			
Line 17 (B-Y OFF)	30 : 00	180			

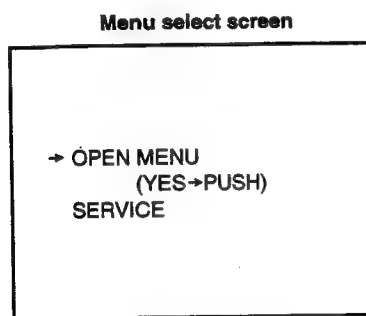
\* Audio levels are -18 dBFS (Reference), except 1 kHz 0 dBFS part.

### 8-3. Menu Operation

#### Service Mode

There are the four major menus, Basic menu and Advanced menu for user, and Service menu, File menu. The unit enters the service mode by setting the switch S811 (OPE/ADJ) on the FP-118A board to ADJ position.

In service mode, the following menu select screen is displayed:



#### Operation of Menu Select Screen

1. To move the cursor

Each time the menu switch is pushed toward "OFF," the cursor moves in between the OPEN MENU and menu name.

The status screen is displayed by pulling the menu switch toward "ON."

The cursor can be moved by turning the menu dial during blinking the cursor.

2. To select the menu

Turn the menu dial during blinking the menu name. As turning the of the MENU dial, the following menu names will be appeared cyclically.

SERVICE ⇔ BASIC ⇔ ADVANCE ⇔ FILE  
⇔SERVICE

When the cursor is moved to the menu name with turning the menu dial, the cursor blinks. In this case, change the menu name after changing the blinking section from cursor to menu name by pressing the menu dial.

When the menu dial is pressed during blinking the menu name, the cursor blinks.

3. To open the selected menu

Display the menu name to be opened. Move the cursor to OPEN MENU and push the menu dial. The first page of the selected menu is displayed.

After the menu selection, usual menu operation can be carried out.

When the selected menu had been finished, menu select screen is displayed.

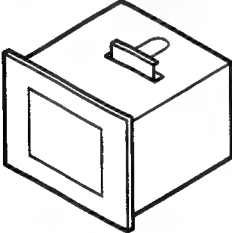

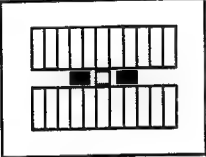
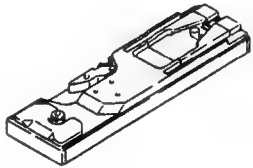
## Section 9

### Camera System Electrical Alignment

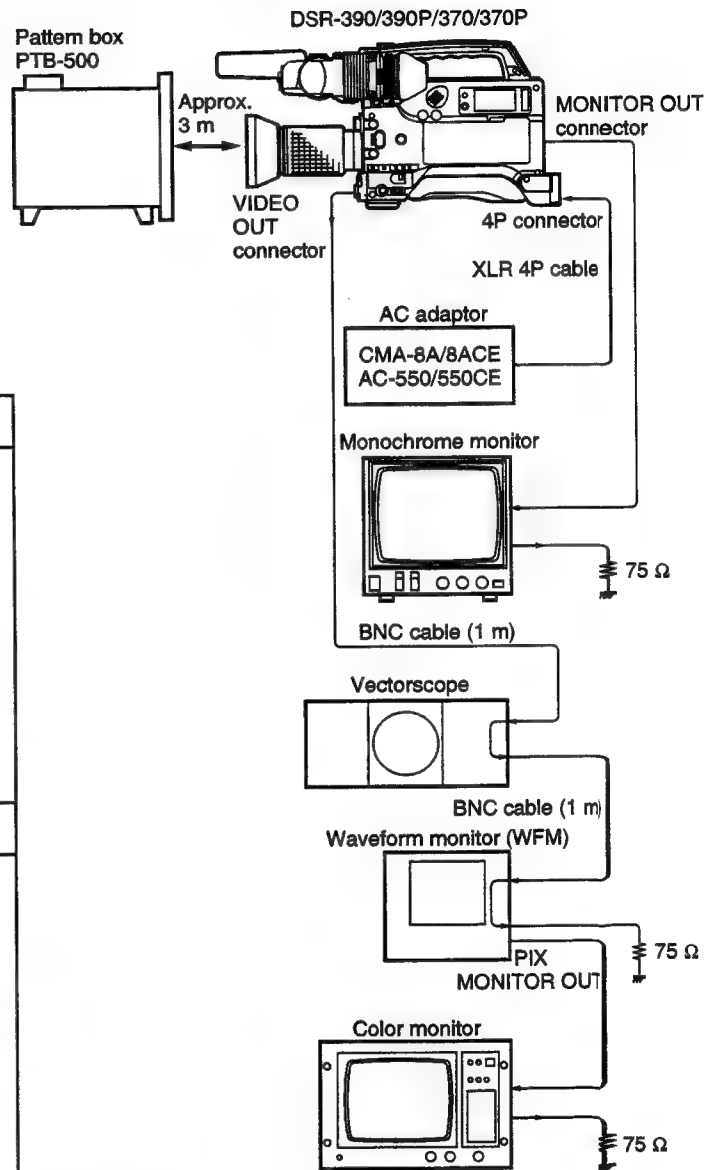
#### 9-1. Preparation

##### 9-1-1. Equipment Required

- Oscilloscope (200 MHz or more)
- Vectorscope
- Waveform monitor (Tektronix 1765 or equivalent)
- Monochrome monitor
- Color monitor
- AC adaptor (Sony CMA-8A/8ACE, or AC-550/550CE)
- Frequency counter

Pattern box PTB-500	Extension board EX-622
Sony part number: J-6029-140-B • Light source for test chart 	Sony part number: J-6276-320-A 
Grayscale chart	Tripod Adaptor VCT-U14
Transparent chart Sony P/N: J-6026-130-B Reflective chart (refer to Section 9-1-6.) 	

##### 9-1-2. Connection



#### Note

When adjusting the camera block, be sure to measure at VIDEO OUT.



### 9-1-3. Switch Setting before Adjustment

#### Side Panel

GAIN switch → LOW (0 dB)  
OUTPUT/DL/DCC+switch → CAM/DCC+  
W. BAL switch → PRESET

#### Front Panel

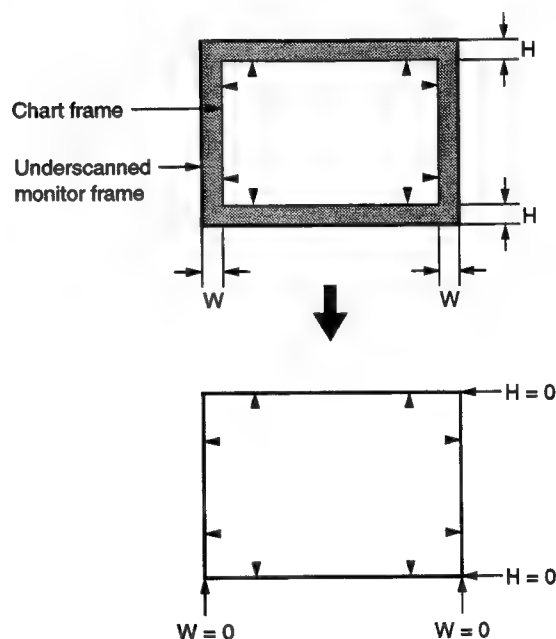
FILTER control → 1 (3200 K)  
SHUTTER switch → OFF  
HYPER GAIN switch  
(operation panel under the cover) → OFF  
MATRIX switch  
(operation panel under the cover) → STD  
EZ MODE button → OFF  
ATW button → OFF  
ZEBRA button → OFF

#### Lens

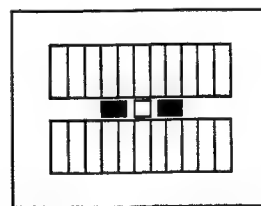
IRIS → Manual  
ZOOM → Manual

### 9-1-4. Notes on Adjustment

- (1) Before adjustment, be sure to allow for 10-minute warm-up time.
- (2) When using the SERVICE menu, refer to "4-2-1. Service Mode Operation."
- (3) Unless otherwise specified, the sentence "chart frame = underscanned monitor frame" is written about the shooting condition.  
In this case, make sure that the lens is best focused. Then adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



In case of the Grayscale chart:



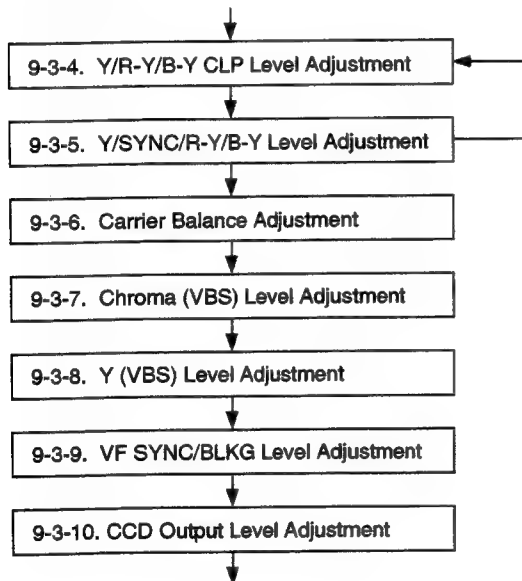
(underscanned monitor screen)

(4) When replacing the CCD unit, be sure to perform the following adjustment items.

- 9-3-11. Black Level Adjustment
- 9-3-12. Carrier Adjustment when DPR (Dual Pixel Readout) is On
- 9-3-13. Shading Adjustment
- 9-3-14. Flare Adjustment

(5) If the amplitude level of the measured waveform is blurred on the waveform monitor screen, set the RESPONSE switch on the waveform monitor to "LUM" mode.

(6) Be sure to perform the following adjustments successively.



## 9-1-5. Adjustment Item

### 9-2. Preparation before Adjustment

- 9-2-1. Color-Bar Signal Confirmation
- 9-2-2. Sensitivity Measurement Confirmation

### 9-3. Camera Adjustment

- 9-3-1. Character Size Adjustment
- 9-3-2. Sub-Carrier Frequency Adjustment
- 9-3-3. INT SC-H Phase Adjustment
- 9-3-4. Y/R-Y/B-Y CLP Level Adjustment
- 9-3-5. Y/SYNC/R-Y/B-Y Level Adjustment
- 9-3-6. Carrier Balance Adjustment
- 9-3-7. Chroma (VBS) Level Adjustment
- 9-3-8. Y (VBS) Level Adjustment
- 9-3-9. VF SYNC/BLKG Level Adjustment
- 9-3-10. CCD Output Level Adjustment
- 9-3-11. Black Level Adjustment
- 9-3-12. Carrier Adjustment when DPR (Dual Pixel Readout) is On
- 9-3-13. Shading Adjustment
- 9-3-14. Flare Adjustment
- 9-3-15. TONE Level Adjustment

### 9-4. Changing the Standard Setting Values (Video Level)

- 9-4-1. Changing Black Level and Gamma Settings
- 9-4-2. Changing Manual Knee and White Clip Settings
- 9-4-3. Changing Flare Setting

## 9-1-6. Maintaining the Grayscale Chart

For the CCD out level adjustment, using an 89.9 %-reflective grayscale chart is preferable.

If a reflective chart is not available, use a well-maintained pattern box and a transparent grayscale chart for adjustment.

Before beginning adjustment, set the illumination of the light source (or the luminous intensity on the chart surface) properly proceeding as follows and set the color temperature to 3200 K exactly by adjusting light.

---

### Information on the reflective grayscale chart

#### Recommended chart

The reflective grayscale chart is commercially available.

Recommended chart: Reflective grayscale chart (with a special case)

MURAKAMI COLOR RESEARCH LABORATORY GS-3 or equivalent

Supplier:

MURAKAMI COLOR RESEARCH LABORATORY

Address: 3-11-3, Kachidoki, Chuo-ku, Tokyo, JAPAN

Postcode 104-0054

Phone: 81-3-3532-3011

Fax: 81-3-3532-2056

#### Handling precautions

- Do not touch the chart's surface.
- Do not subject the surface to dirt, scratches or prolonged exposure to sunlight.
- Protect the chart from excess moisture and harmful gas.
- Avoid resting articles against the case.
- Open the case and dry the chart more an hour for a month in no use long period.

#### Replacement period when the chart is used as the reference

The reflective grayscale chart should be replaced every two years if it used as the reference. Because the chart deteriorates with time and proper adjustment cannot be achieved.

Replacement period varies according to storage conditions of the chart.

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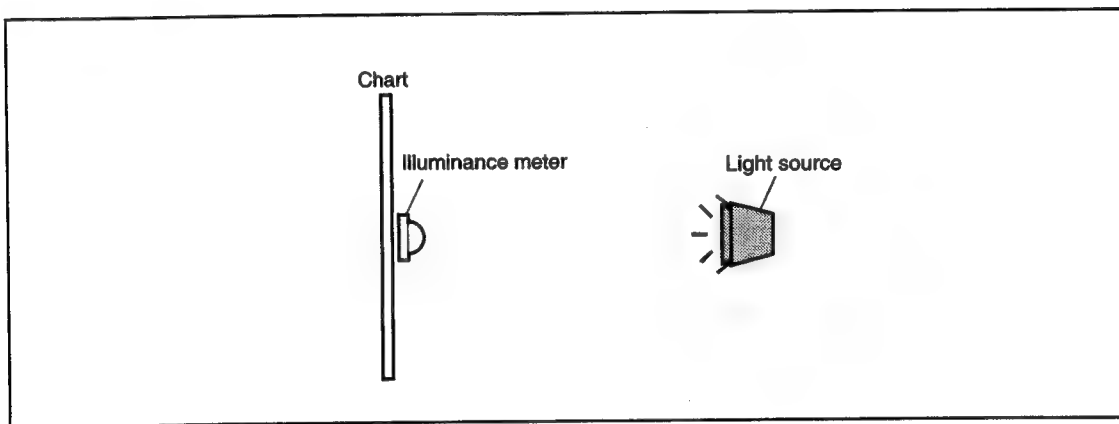
## Setting illumination (when the reflective chart is used)

Equipment: Illuminance meter (Calibrated)

1. Turn on the light source and warm up for about 30 minutes.
2. Place the illuminance meter on the chart surface.  
Adjust the position and angle of the light source so that the whole surface of the chart is evenly 2000 lx.

**Note**

Light the chart from almost the same direction and height as the camera to shoot the chart.



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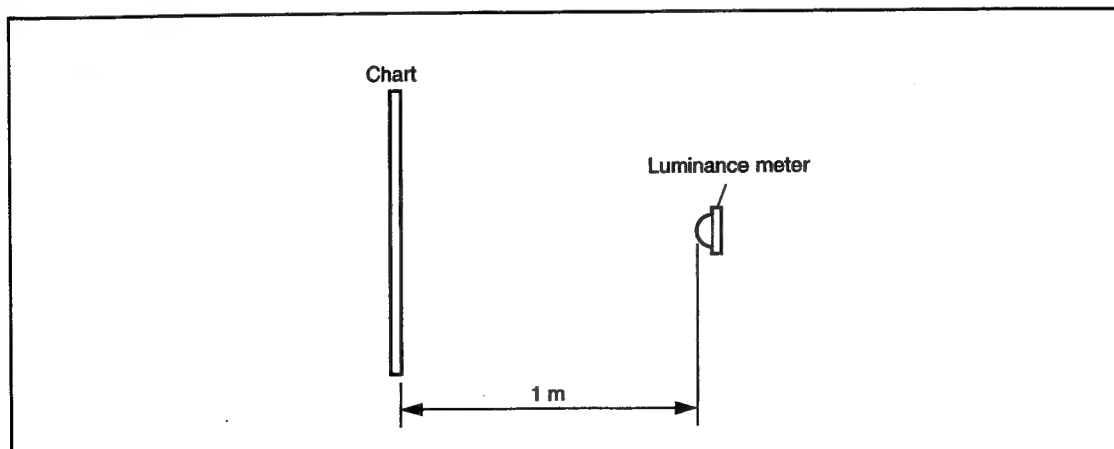
## Setting luminous intensity (when the transparent chart is used)

Equipment: Luminance meter (Minolta LS-110 or equivalent. Calibrated.)

1. Light the pattern box and warm up for about 30 minutes.
2. Place the pattern box where the chart is not exposed to light, such as a darkroom.  
(Or cover the pattern box with a cover whose inside is painted in black.)
3. Place the luminance meter facing straight to the chart at a distance of 1 m from it.
4. Adjust the luminance control of the pattern box so that the white portion in the center of the chart is  $573 \pm 6 \text{ cd/m}^2$ .

**Note**

This corresponds to the luminous intensity on the 89.9 %-reflective chart at 2000 lx.



## 9-2. Before Adjustment

### Notes

- Before adjustment, connect the equipment referring to “9-1-2. Connection”.
- Before adjustment, turn on POWER switch and allow for 10-minute warm-up time.

### 9-2-1. Color-Bar Signal Confirmation

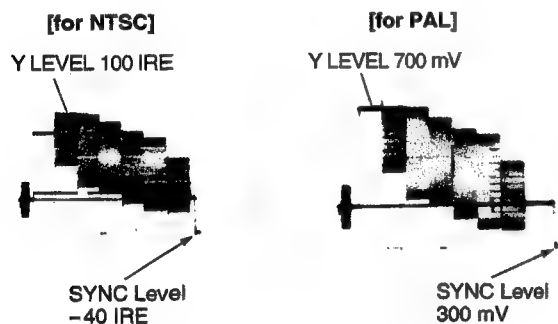
**Equipment:** Waveform monitor/vectorscope

**Preparation:**

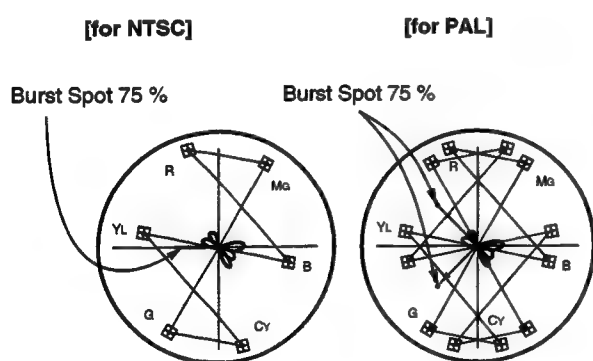
- OUTPUT/DL/DCC+switch (side panel) → BARS

**Test point:** VIDEO OUT connector

**Specification:**



- Chroma Level  
Confirm that the beam spots of each color (R, Y<sub>L</sub>, G, C<sub>y</sub>, B and M<sub>G</sub>) stays inside the reference frame “田”.



### Notes

- Partial difference between scale and signal level is caused by photographic error.
- If the specifications are not met, carry out from “9-3-3. INT SC-H Phase Adjustment” through “9-3-8. Y (VBS) Level Adjustment”.

### 9-2-2. Sensitivity Measurement Confirmation

**Object:** Overall white

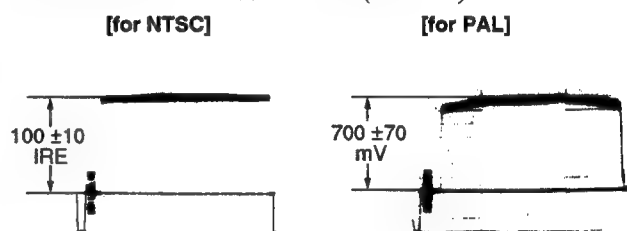
**Light:** 3200 K, 2000 lux  
(If the pattern box is used, set the AUTO mode)

**Equipment:** Waveform monitor

**Preparation:**

- Adjust the zoom control at “TELE” so that the white pattern frame touches the underscanned picture frame on the screen.
- Lens iris → F11
- OUTPUT/DL/DCC+switch (side panel) → CAM
- W. BAL switch (side panel) → PRESET

**Specification:** 100 ± 10 IRE (for NTSC)  
700 ± 70 mV (for PAL)



### Note

If the specification is not met, perform “9-3-10. CCD OUT Level Adjustment.”

### 9-3. Camera Adjustment

#### Note

Before the adjustment, enter the "PAGE 1" of SERVICE menu, and perform the "RESET".

#### 9-3-1. Character Size Adjustment

**Equipment:** Monochrome monitor

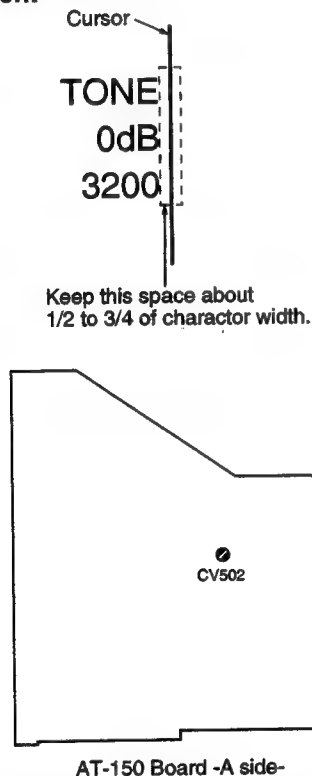
**Preparation:**

- MONITOR OUT CHARACTER switch (operation panel under the cover) → ON

**Test point:** MONITOR OUT connector

**Adjusting point:** CV502/AT-150 board

**Specification:**



#### 9-3-2. Sub-Carrier Frequency Adjustment

**Equipment:** Frequency counter

**To be extended:** ES-31/31P board

**Test point:** TP801 (GND: E801)/ES-31/31P board

**Adjusting point:** SERVICE menu "PAGE 8"

→ SC FREQ :

Perform adjustment by turning the MENU dial, then store the data by pushing the MENU dial.

**Specification:** 3,579,545 ± 10 Hz (for NTSC)  
4,433,618 ± 10 Hz (for PAL)

#### 9-3-3. INT SC-H Phase Adjustment

#### Note

Stated below is a procedure with the SC-H phase measuring equipment (Tektronix Waveform monitor 1765).

If any other equipment is used, perform adjustment at the following adjustment point by reading the instruction manual attached.

**Equipment:** Waveform monitor (SC-H Phase mode)

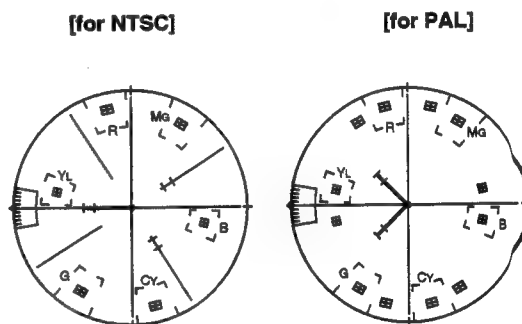
**Preparation:**

- Put the Tektronix Waveform monitor 1765 to SC-H mode.

**Test point:** VIDEO OUT connector

#### Adjustment Procedure

- SERVICE menu "PAGE 8" → SC-H :
- Adjust the phase relationship between SC (Burst) and H beam spot correctly by turning the MENU dial, then store the data by pushing the MENU dial.



#### Note

After this adjustment, set the mode of Tektronix Waveform monitor 1765 to "WFM" mode.

### 9-3-4. Y/R-Y/B-Y CLP Level Adjustment

**Equipment:** Oscilloscope

**To be extended:** ES-31/31P board

**Preparation:**

- OUTPUT/DL/DCC+switch (side panel) → BARS
- S401/ES-31/31P setting : → CCZ ON
- Measure the levels at TP393, TP395, and TP397 after the termination with 75  $\Omega$  resistor.

**Trigger:** HD (TP349/extension board)

#### Adjustment Procedure

1. Select "PAGE 12" of SERVICE menu, make sure that TEST is "OFF," and R-Y and B-Y mode are both "ON".
2. SERVICE menu "PAGE 6"
  - Y CLP :
  - R-Y CLP :
  - B-Y CLP :

#### Note

In case of Y CLP for NTSC model, perform the following adjustments:

- ① Select "PAGE 11" of SERVICE menu, and set the "SETUP" to "OFF."
  - ② Select "PAGE 6" of SERVICE menu, and move the cursor to Y CLP, and adjust it so that A is  $0 \pm 5$  mV.
  - ③ Select "PAGE 11" of SERVICE menu, and set the "SETUP" to "ON."
  - ④ Return to "PAGE 6", and adjust Y CLP, R-Y CLP and B-Y CLP respectively.
3. Perform adjustment by turning the MENU dial, then store the data by pushing the MENU dial.

### 9-3-5. Y/SYNC/R-Y/B-Y Level Adjustment

**Equipment:** Oscilloscope

**To be extended:** ES-31/31P board

**Preparation:**

- OUTPUT/DL/DCC+switch (side panel) → BARS
- S401/ES-31/31P setting : → CCZ ON
- Measure the levels at TP393, TP395, and TP397 after the termination with 75  $\Omega$  resistor.

**Trigger:** HD (TP349/extension board)

#### Adjustment Procedure

1. Select "PAGE 12" of SERVICE menu, make sure that TEST is "OFF", and R-Y and B-Y mode are both "ON".
2. SERVICE menu "PAGE 5"
  - Y LEV :
  - R-Y LEV :
  - B-Y LEV :
  - SYNC LEV :
  - SET UP LEV :

3. Perform adjustment by turning the MENU dial, then store the data by pushing the MENU dial.

#### Note

In case of Y LEV for NTSC model, perform the adjustment as follows.

- ① Move the cursor to Y LEV.
- ② Adjust the "A" of Y LEV level.
- ③ Move the cursor to SETUP LEV, and adjust it so that F is  $54 \pm 5$  mV.
- ④ Repeat the steps ① through ③ several times.

GND : TP394/Extension board

Item	Test Point (Extension board)	Specification
Y CLP	TP393 (NTSC)	A = $0 \pm 5$ mV (PAL)
R-Y CLP	TP395	B = $0 \pm 5$ mV
B-Y CLP	TP397	C = $0 \pm 5$ mV

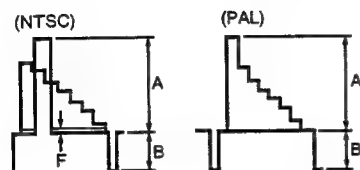
#### Note

After adjustment, set the S401 switch to NORM.

GND : TP394/Extension board

Item	Test Point (Extension board)	Specification
Y LEV	TP393	NTSC : $A = 714 \pm 10$ mV F = $54 \pm 5$ mV PAL : $A = 700 \pm 10$ mV

SYNC LEV	TP393	NTSC : $B = 286 \pm 5$ mV PAL : $B = 300 \pm 5$ mV
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R-Y LEV	TP395	NTSC : $700 \pm 20$ mV PAL : $525 \pm 20$ mV
---------	-------	---



B-Y LEV	TP397	NTSC : $700 \pm 20$ mV PAL : $525 \pm 20$ mV
---------	-------	---



#### Note

After adjustment, set the S401 switch to NORM.

### 9-3-6. Carrier Balance Adjustment

**Equipment:** Vectorscope (MAX GAIN)

**Preparation:**

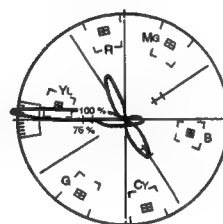
• OUTPUT/DL/DCC+switch (side panel) → BARS

**Test point:** VIDEO OUT connector

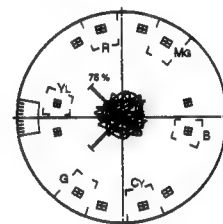
#### Adjustment Procedure

- SERVICE menu "PAGE 7"  
→ R-Y C/B : } Adjust alternately  
B-Y C/B : }
- Move the cursor to R-Y C/B or B-Y C/B with STATUS/MENU switch, and adjust the beam spot so that it is in the center of the vectorscope by turning the MENU dial, then store the data by pushing the MENU dial.

[for NTSC]



[for PAL]





### 9-3-7. Chroma (VBS) Level Adjustment

#### Note

Be sure to use the specified vectorscope which is conformed to the SET UP 0 function.

**Equipment:** Vectorscope

**To be extended:** ES-31/31P board

**Preparation:**

- GAIN switch/Vectorscope → 75 % CAL
- Adjust the PHASE control on the vectorscope so that the burst spot is overlapped with the 75 % axis.
- OUTPUT/DL/DCC+switch (side panel) → BARS

**Test point:** VIDEO OUT connector

#### Adjustment Procedure

1. [for NTSC]

- SERVICE menu "PAGE 7"
- B-Y BST :

#### Note

In case of NTSC, make sure that "R-Y BST" must be "0".

- Adjust the burst spot so that it is located at 75 % scale mark on the vectorscope screen by turning the MENU dial, then store the data by pushing the MENU dial.

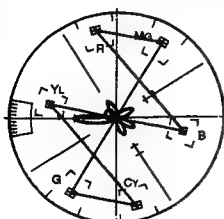
[for PAL]

- SERVICE menu "PAGE 7"
- R-Y BST :
- B-Y BST :
- Adjust "R-Y BST" and "B-Y BST" alternately so that burst spot is located at 75 % scale mark on the vectorscope screen by turning the MENU dial, then store the data by pushing the MENU dial.

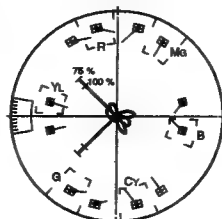
2. Adjust the following controls alternately so that each beam spot stays inside the reference frame "E".
- RV103 (B-Y LEV)/ES-31/31P board
  - FL101 (PHASE)/ES-31/31P board
  - RV101 (CHROMA VBS LEV)/ ES-31/31P board

3. Then, perform the above procedure 1 again.

[for NTSC]



[for PAL]



### 9-3-8. Y (VBS) Level Adjustment

**Equipment:** Waveform monitor

**To be extended:** ES-31/31P board

**Preparation:**

- OUTPUT/DL/DCC+switch (side panel) → BARS

**Test point:** VIDEO OUT connector

#### Adjustment Procedure

1. [for NTSC]

- SERVICE menu "PAGE 11"
- SET UP: ON
- MAT DEST: SMPTE
- SERVICE menu "PAGE 5"
- SETUP LEV:

Perform adjustment by turning the MENU dial, then store the data by pushing the MENU dial.

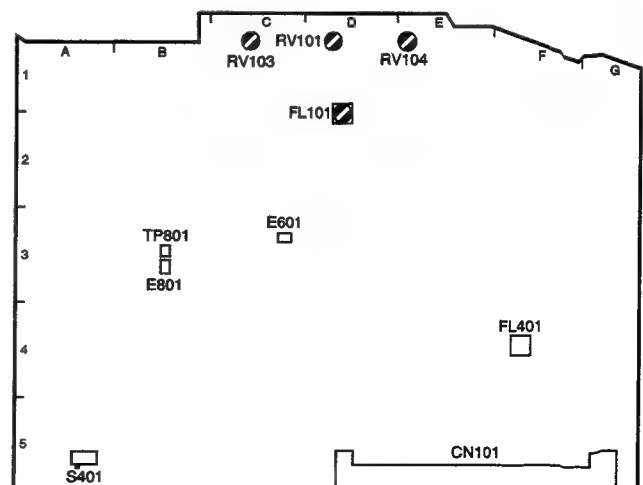
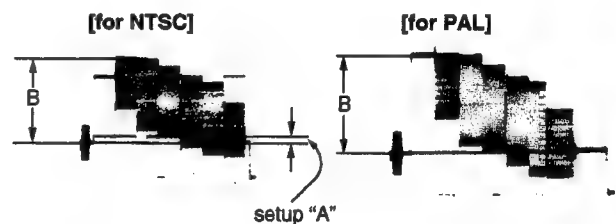
**Specification:**  $A = 7.5 \pm 0.5$  IRE (See below waveform)

[for PAL]

- SERVICE menu "PAGE 11"
- COMP LEV: 525 (not 700)

2. **Adjusting point:** RV104 (Y LEVEL)/ES-31/31P board

**Specification:** for NTSC  $B = 100 \pm 2$  IRE  
for PAL  $B = 700 \pm 10$  mV



ES-31/31P Board (A side)

### 9-3-9. VF SYNC/BLKG Level Adjustment

**Equipment:** Oscilloscope

**To be extended:** ES-31/31P board

**Preparation:**

- OUTPUT/DL/DCC+switch (side panel) → BARS
- If no viewfinder (DXF-801) is connected, terminate TP325 with 3 kΩ resistor.

**Trigger :** HD (TP349/extension board)

#### Adjustment Procedure

- SERVICE menu "PAGE 7"  
→ VF SYNC :  
VF BLKG :

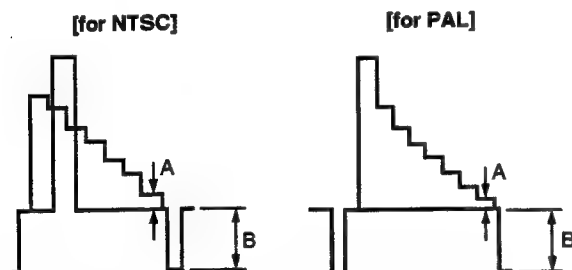
#### Note

First, perform "VF BLKG" adjustment, then "VF SYNC" adjustment.

- Perform adjustment by turning the MENU dial, then store the data by pushing the MENU dial.

GND: TP326/Extension board

Item	Test Point (Extension board)	Specification
VF BLKG	TP325	A = $50 \pm 10$ mV
VF SYNC	TP325	NTSC : B = $290 \pm 10$ mV PAL : B = $300 \pm 10$ mV



### 9-3-10. CCD Output Level Adjustment

#### Notes

- Usually, this adjustment is not required except when the output level of CCD unit is remarkably different from the specified level.
- As a replacement CCD unit is precisely adjusted at the factory, it is not necessary to perform this adjustment when the CCD unit had been replaced with a new one.

- For the CCD output level adjustment, using an 89.9 %-reflective grayscale chart is preferable.  
Before beginning adjustment, be sure to set the illumination of the light source (or the luminous intensity on the chart surface) and to set the color temperature exactly.  
For details, refer to Section 9-1-6 "Maintaining the Grayscale Chart."

**Light:** 3200 K, 2000 lux  
(If the designated pattern box is used, set the AUTO mode.)

**Object:** Grayscale chart

**Equipment:** Oscilloscope

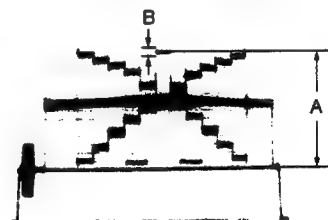
**Preparation:**

- OUTPUT/DL/DCC+switch (side panel) → CAM/DCC+
- W. BAL switch (side panel) → PRESET
- Chart frame = Underscanned monitor frame
- FILTER knob: 1 (3200 K)
- Loosen the four screws and open the right panel.  
Then remove the two screws fixing the VA-199 board, and open the VA-199 board with the connectors and the flat cable connected.

**Test point:** VIDEO OUT connector

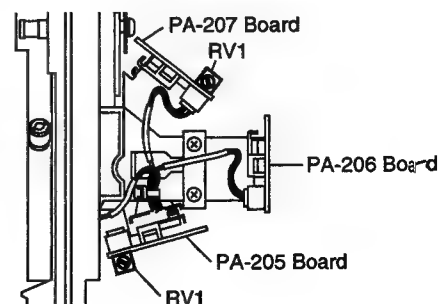
#### Adjustment Procedure

- Adjust the lens iris so that the white level "A" is as follows:  
for NTSC: A =  $90 \pm 10$  IRE  
for PAL: A =  $630 \pm 70$  mV
- Adjust the following controls alternately to minimize the carrier leakage "B."  
RV1/PA-207 (B) board } Adjust alternately  
RV1/PA-205 (R) board }



#### Note

Set "PAGE 3: PRE.WHT" of Basic menu to 3200.



### 9-3-11. Black Level Adjustment

**Equipment:** Waveform monitor  
**Test point:** VIDEO OUT connector

#### Adjustment Procedure

1. SERVICE menu "PAGE 17"  
→ M. BLACK:
2. Close the lens iris.
3. Push down the "WHT/BLK" switch (front panel) to "BLK" side.
4. Perform adjustment by turning the MENU dial, then store the data by pushing the MENU dial.

**Specification:**  $A = 10 \pm 1$  IRE (for NTSC)  
 $20 \pm 7$  mV (for PAL)



### 9-3-12. Carrier Adjustment when DPR (Dual Pixel Readout) is On

**Equipment:** Waveform monitor/vectorscope (MAX GAIN)

#### Preparation:

- HYPER GAIN Switch (operation panel under the cover) → ON
- OUTPUT/DL/DCC+switch (side panel) → CAMDCC+

**Test point:** VIDEO OUT connector

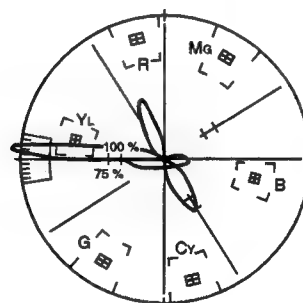
#### Adjustment Procedure

1. SERVICE MENU "PAGE 27"  
→ RD. DARK :  
GD. DARK :  
BD. DARK :
2. Close the lens iris.
3. Adjust the setting value of RD. DARK/GD. DARK/BD. DARK by turning the MENU dial to meet the specifications 1 and 2.

**Specification 1:**  $A = 10 \pm 1$  IRE (for NTSC)  
 $20 \pm 7$  mV (for PAL)



**Specification 2:** The beam spot of black level is in the center position on the vector scope screen.



4. Store the data by pushing the MENU dial.
5. Confirm to meet the specifications 1 and 2 at GAIN 0 dB.

### 9-3-13. Shading Adjustment

This section describes the adjustment procedures for the CCD unit replacement (or the replacement of the AT-150 board/EEPROM on the AT-150 board), and if necessary, the adjustment procedures for more precise setting according to customer's lens.

#### When replacing CCD unit

When replacing the AT-150 board or the EEPROM (IC504) on the AT-150 board, perform this adjustment, too.

1. Attach the lens VCL-716BX or VCL-719BX to the unit.
2. Set LENS SEL in "PAGE 4" of Advanced menu to No.1 (VCL-719BX) or No.3 (VCL-716BX).
3. Perform the automatic adjustment or the manual adjustment.

#### [Automatic adjustment]

- (1) Perform the AUTO SHAD in "PAGE 2" of Service menu.
- (2) Perform the step 6 in the adjustment procedure of Manual adjustment.

#### [Manual adjustment]

Perform the steps 1 to 6 of adjustment procedure.

#### Note

When the customer using the lens with extender, adjust with the extender set to both OFF and ON.

(automatic or manual adjustment)

If the lens with extender is not used for adjustment, its setting cannot be performed.

For setting the LENS SEL, set a desired number referring to Chapter 5 "Adjustment the Lens, Designating the lens" in the Operating Instructions.

#### For more precise setting according to customer's lens

1. Attach the customer's lens to the unit.
2. Set LENS SEL in "PAGE 4" of Advanced menu to No.4.
3. Perform the steps 1 to 5 in the adjustment procedure of Manual adjustment.

#### Manual adjustment

**Object:** White portion of pattern box

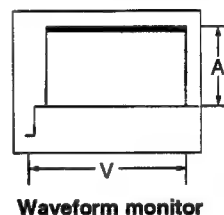
**Equipment:** Waveform monitor, Oscilloscope

**To be extended:** VA-199 board

**Trigger:** VD (TP2/VA-199 board)

#### Adjustment Procedure

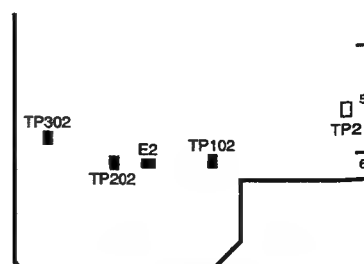
1. SERVICE menu "PAGE2"  
→ R W.SHAD:  
G W.SHAD:  
B W.SHAD:
2. Shoot the center portion of pattern box by zooming the lens to fully TELE position.  
In case of using the lens with extender, set the extender to off.
3. Adjust the lens iris so that the level "A" is  $70 \pm 2$  IRE for NTSC (for PAL:  $490 \pm 14$  mV) on the VIDEO OUT connector of camera.



4. In the following mode, perform adjustment by turning the MENU dial until the waveform on oscilloscope becomes flat. After adjustment, store the data by pushing the MENU dial.

GND: E2/VA-199 board

Mode	Test point (VA-199 board)	Specification
R W.SHAD	TP102	
G W.SHAD	TP202	
B W.SHAD	TP302	



VA-199 BOARD (A SIDE)

5. In case of using the lens with extender, set the extender to ON, then perform the adjustment of step 4.
6. Only when replacing the CCD unit (or replacing the AT-150 board/EEPROM on the AT-150 board):  
According to the table below, add the following values to the setting values except the value of the adjusted lens number.

**In case of using the lens VCL-719BX or VCL-716BX:**

LENS SEL	VCL-719BX			VCL-716BX		
	R	G	B	R	G	B
1	(standard)			+15	-15	+15
2	+15	-10	+15	+30	-25	+30
3	-15	+15	-15	(standard)		
4	0	0	0	0	0	0

Additional value

**In case of using the lens with extender:**

The following table shows the factory setting values (additional values) based on the LENS SEL No.1 of the lens without extender. (Reference values)

When a desired lens number is specified for the adjustment, calculate RGB values for other lens numbers based on the specified number referring to the following table to set.

LENS SEL	EXTENDER OFF			EXTENDER ON		
	R	G	B	R	G	B
1	(standard)			-10	+20	-10
2	+15	-10	+15	-10	+20	-10
3	-15	+15	-15	-10	+20	-10
4	0	0	0	0	0	0

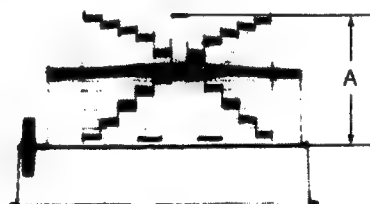
Additional value

## 9-3-14. Flare Adjustment

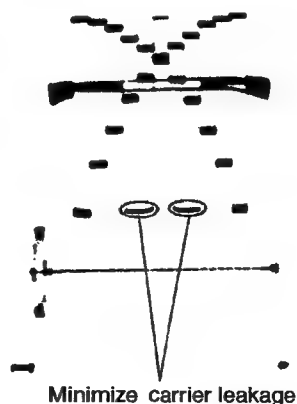
**Object:** Grayscale chart  
**Equipment:** Waveform monitor

### Adjustment Procedure

1. SERVICE menu "PAGE 3"  
→ R FLARE: 10  
G FLARE: x  
B FLARE: x  
\* Leave R FLARE "10."
2. Chart frame = Underscanned monitor frame
3. **Test point:** VIDEO OUT connector  
**Adjusting point:** Lens iris  
**Specification:** A =  $100 \pm 2$  IRE (for NTSC)  
 $700 \pm 10$  mV (for PAL)



4. Open the lens iris by two steps.
5. Adjust "G FLARE" and "B FLARE" alternately by turning MENU dial until the carrier leakage level is minimum, then store the data by pushing the MENU dial.



### 9-3-15. TONE Level Adjustment

**Equipment:** Oscilloscope

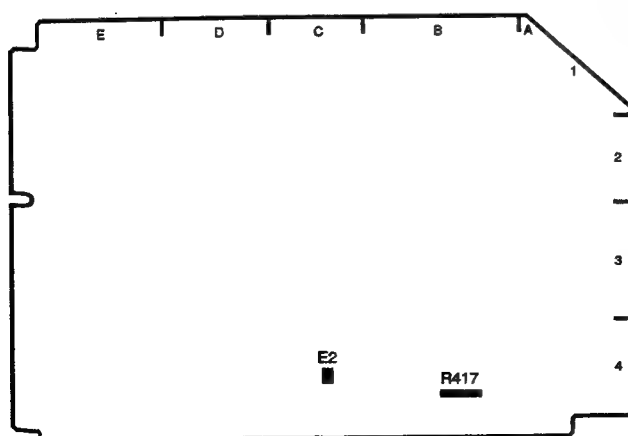
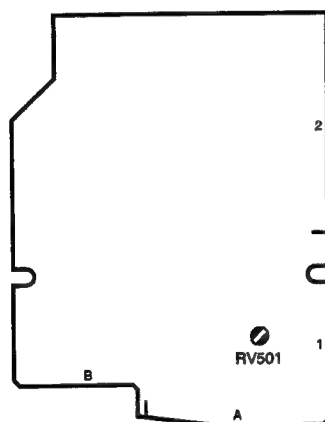
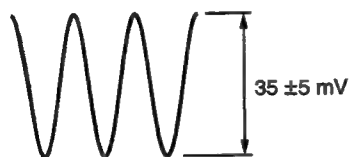
**Preparation:**

- OUTPUT/DL/DCC+switch (side panel) → BARS

#### Adjustment Procedure

1. Open the AT-150 board.
2. **Test point:** R417 (0 Z)/FP-118A board  
(GND: E2/FP-118A board)

**Adjusting point:** RV501/AA-104 board



### 9-4. Changing the Standard Setting Values (Video Level)

#### Note

To change the standard setting value for Black Level, Gamma, Manual Knee and White Clip levels by customer's request, proceed as follows:

#### 9-4-1. Changing Black Level and Gamma Settings

Black Level and Gamma can be adjusted by the items M.BLACK and M.GAMMA of the Advanced menu "PAGE 10".

The following procedure describes how to change adjustment center value ( $\pm 0$ ) from its factory-set value.

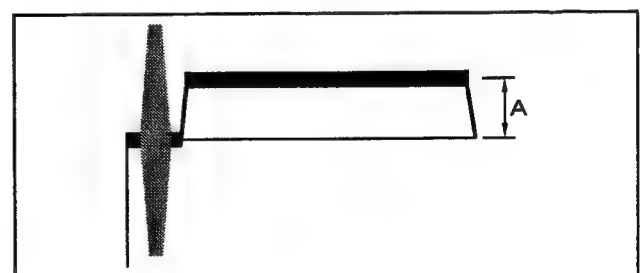
**Equipment:** Waveform monitor

**Preparation:**

- Connect the waveform monitor to VIDEO OUT terminal.
- Perform the switch setting before adjustment.  
(Refer to Section 9-1-3.)
- A. IRIS MODE switch (side panel) → STD

#### 1. Black Level change setting

- (1) Close (C) the lens iris and perform the black balance adjustment.
- (2) Select SERVICE menu "PAGE17", adjust the M.BLACK item for the black level A.



M.BLACK Standard value = 2083

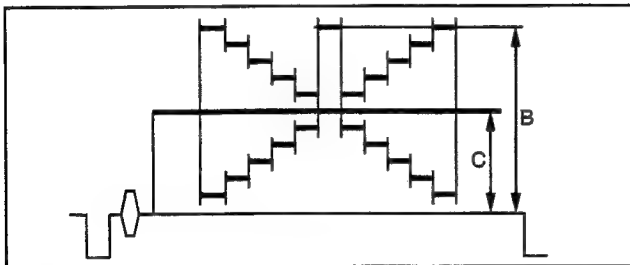
**Specification:** A = 10 IRE (for NTSC)

A = 20 mV (for PAL)

Higher adjustment values set higher black levels and lower adjustment values set lower black levels.

## 2. Gamma Change Setting

- (1) Open the lens iris, shoot the grayscale chart fully in the underscanned monitor frame.
- (2) Perform the white balance adjustment, adjust the lens iris so that the white level becomes 100 IRE (B = 100 IRE).
- (3) Select SERVICE menu "PAGE17", adjust the M.GAMMA item for the cross point C on the grayscale.



M.GAMMA standard setting value = 132

Change the M.GAMMA value on SERVICE menu "PAGE17" (Refer to section 4 Setting Menu). Higher adjustment values set higher gamma coefficient, that is, the level (C) of the gray scale become higher compared to at the standard setting value as shown in Fig.1.

Lower adjustment values make the level (C) lower as shown in Fig.2.

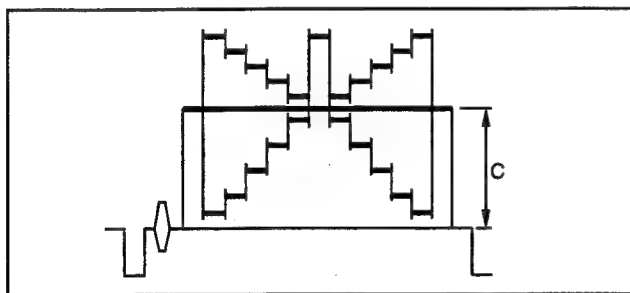


Fig.1

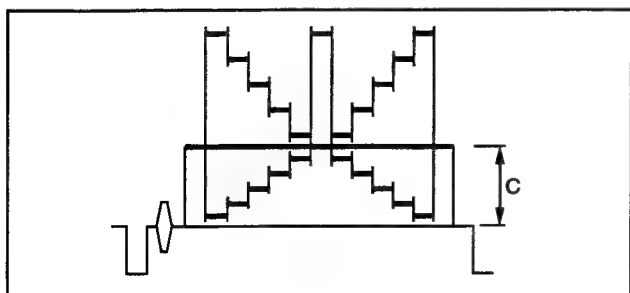


Fig.2

## 9-4-2. Changing Manual Knee and White Clip Settings

**Equipment:** Waveform monitor

### Preparation:

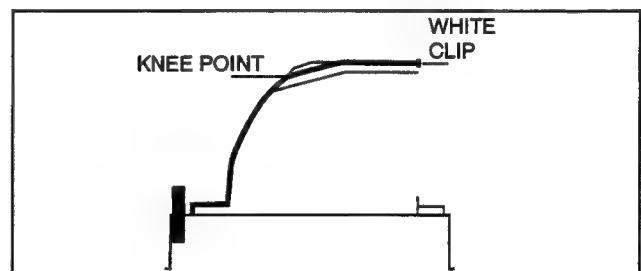
- Connect the waveform monitor to VIDEO OUT terminal.
- GAIN switch (side panel) → LOW (0 dB)
- OUTPUT/DL/DCC+switch (side panel) → CAM/DL
- HYPER GAIN switch (operation panel under the cover) → OFF
- EZ MODE button (side panel) → OFF
- ATW button (side panel) → OFF

### 1. Manual Knee

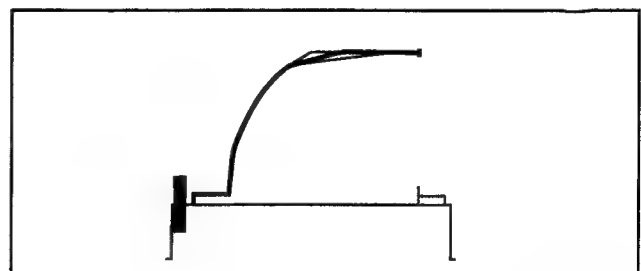
- (1) Select Advanced menu "PAGE2", set DL to OFF (Manual Knee mode).
- (2) Select FILE menu "PAGE12", set TEST SAW to ON and TEST to 2.
- (3) Select FILE menu "PAGE6", change the Knee setting value by the following parameter.

M.KNEES P : Knee Point

M.KNEES S : Knee Slope



Knee Point



Knee Slope

- Higher adjustment values of knee point set a higher knee point level, and lower adjustment values set a lower level.
- Higher adjustment values of knee slope make the slope gentle, and lower adjustment values make the slope steep.

## **2. White Clip Level**

Select SERVICE menu "PAGE18", change the white clip level by the following WHT CLIP parameter.

White Clip Level of this unit is factory-aligned as follows:

for NTSC : 107 IRE

for PAL : 109 %

WHT CLIP : White Clip Level

(Standard setting value = 255)

Lower adjustment values of white clip make the clip point of the video level low, and higher adjustment values make it high.

### **Note**

If you set the clip level to the lower level, it is recommended to change the manual Knee at the same time to ensure the grayscale reproducibility at the high intensity portion.

## **9-4-3. Changing Flare Setting**

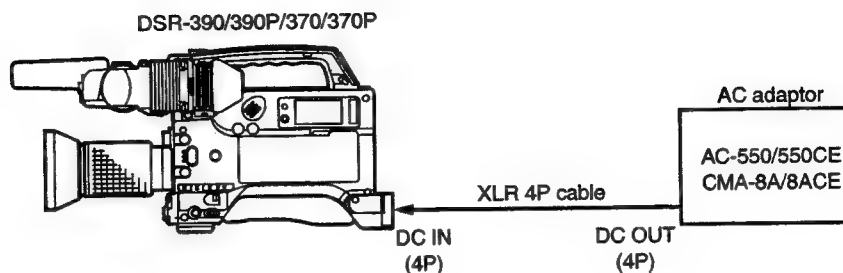
For this item, refer to Section 9-3-14. Flare Adjustment.



## Section 10

### VTR System Electrical Alignment

#### System Connection



#### Switch Setting

##### • Side Panel

EZ MODE:	OFF
ATW:	OFF
ZEBRA:	OFF
GAIN:	L
OUTPUT:	BARS
W.BAL:	PRE
SKIN DTL:	OFF
EXT VTR OUTPUT:	COMPONENT, VBS
HYPER GAIN:	OFF
MATRIX:	STD
FRONT MIC LOW CUT:	OFF
VTR TRIGGER:	INT ONLY
MONITOR SELECT:	MIX
TC MODE 1:	PRESET
TC MODE 2:	F-RUN
MONITOR OUT CHARACTER:	OFF
AUDIO SELECT CH-1/CH-2:	MAN
AUDIO IN CH-1/CH-2:	REAR
DISPLAY:	TC

AUDIO LEVEL VR CH-1/CH-2:	CCW
MONITOR VR:	CCW
ALARM VR:	CW

##### • Rear Panel

AUDIO IN CH-1/CH-2:	LINE
---------------------	------

## 10-1. System Control Adjustment

### Equipment Required

- Frequency counter (IWATSU SC-7102 or equivalent)
- DC power supply (SONY AC-550/550CE or CMA-8A/8ACE)

### 10-1-1. Clock Frequency Adjustment

- Equipment:** Frequency Counter
- Preparation:**
- Input Singal (No signal)
  - EE mode

### Adjustment Procedure

1. Press the MENU button once.  
The following message is displayed on the LCD screen.  
(In the following description, an underlined part indicates a portion of the display which is blinking.)

1 0 1 200 1

2. Press the SHIFT button once.  
The following message is displayed on the LCD screen.

200 1 x x x x

3. Confirm that rightmost digit is 1.  
If not, set it to 1 by following the procedure.

- ① Press the SHIFT button to blink the underlined digits.

200 1 x x x x

- ② Press the ADVANCE button to set the rightmost digit to 1.

200 1 x x x 1

- ③ Press the SHIFT button seven times.

The following message is displayed on the LCD screen.

200 1 x x x 1

### Note

Be sure not to blink the underlined part.

200 1 x x x 1

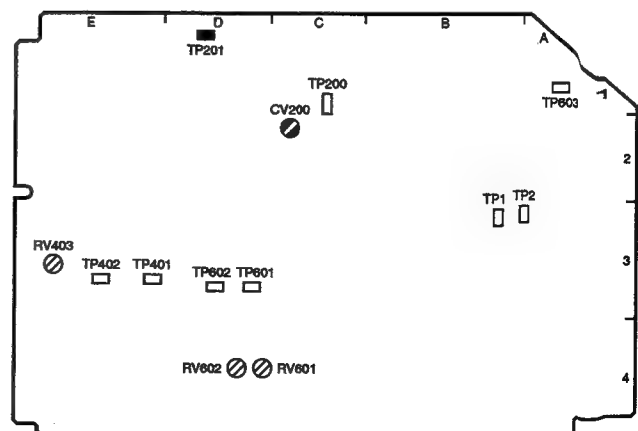
4. Perform the following adjustment:

**Test point:** TP201/FP-118A Board (D-1)

**Adjusting point:** CV200/FP-118A Board (C-2)

**Specification:** 256.0025 ± 0.0005 Hz

5. Press the MENU button, and exit from the maintenance menu.



FP-118A BOARD (B SIDE)

## 10-2. Servo System Adjustment

### Equipment Required

DC power supply (SONY AC-550/550CE or CMA-8A/8ACE)

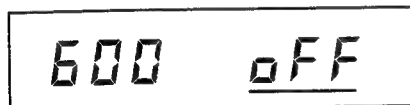
### 10-2-1. Capstan FG Duty Adjustment

#### Adjustment Procedure

1. Check that there is no tape in the unit.
2. Close the cassette compartment when it is opened. (It is not necessary to reinstall the cassette compartment if it is removed.)
3. Set the unit in maintenance menu, and select Menu No. 601.
- (1) While pressing the SHIFT button, press the MENU button, then release the SHIFT button, and press the MENU button for more than one second.  
The following message is displayed on the LCD screen.  
(In the following description, an underlined part indicates a portion of the display which is blinking.)

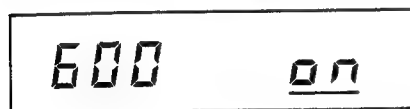


- (2) Press the RESET (MENU SET) button once to blink "oFF."  
The following message is displayed on the LCD screen.



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on."  
The following message is displayed on the LCD screen.



Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.

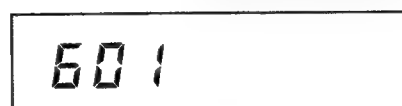
The following message is displayed on the LCD screen.



Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button once to display Menu No. 601.

The following message is displayed on the LCD screen.



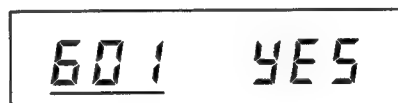
Each time the ADVANCE button is pressed, the Menu Nos. are changed as follows:

600 → 601 → 603 → ... 513 → 600 → 601 → ...

Each time the SHIFT button is pressed, the Menu Nos. are changed as follows:

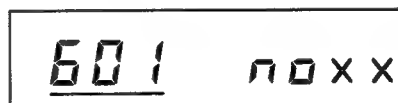
600 → 513 → 509 → ... 601 → 600 → 513 → ...

4. Press the RESET (MENU SET) button.
5. Check that the capstan is rotating, and wait for a while (Up to 60 seconds).
6. Check that the following message is displayed on the LCD screen.



When the following message is displayed on the LCD screen, exit from Menu No. 601, and perform after step 3 again.

If the following message is still shown on the LCD screen, check whether the unit is normal or not.



XX: 10 → The capstan does not rotate  
11 → The capstan FG (A) cannot be adjusted  
12 → The capstan FG (B) cannot be adjusted  
E0 → Cannot save data  
Fd → Not supported menu  
FE → Prohibits adjustments (Ex.: Tape loaded)

7. Press the MENU button, and exit from the maintenance menu.

The state before the maintenance menu indication will be displayed on the LCD screen.

## 10-2-2. Reel FG Duty Adjustment

### Adjustment Procedure

1. Check that there is no tape in the unit.
2. Close the cassette compartment when it is opened. (It is not necessary to reinstall the cassette compartment if it is removed.)
3. Set the unit in maintenance menu, and select Menu No. 607.
- (1) While pressing the SHIFT button, press the MENU button, then release the SHIFT button, and press the MENU button for more than one second.  
The following message is displayed on the LCD screen.  
(In the following description, an underlined part indicates a portion of the display which is blinking.)



600 oFF

- (2) Press the RESET (MENU SET) button once to blink "oFF."  
The following message is displayed on the LCD screen.



600 oFF

Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on."  
The following message is displayed on the LCD screen.



600 on

Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.  
The following message is displayed on the LCD screen.



600 on

Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button several times to display Menu No. 607.  
The following message is displayed on the LCD screen.



607

Each time the ADVANCE button is pressed, the Menu Nos. are changed as follows.

600 → 601 → 603 → ... 513 → 600 → 601 → ...

Each time the SHIFT button is pressed, the Menu Nos. are changed as follows.

600 → 513 → 509 → ... 601 → 600 → 513 → ...

4. Press the RESET (MENU SET) button.
5. Check that the reel motor is rotating, and wait for a while (Up to 60 seconds).
6. Check that the following message is displayed on the LCD screen.



607 YES

When the following message is displayed on the LCD screen, exit from Menu No. 607, and perform after step 3 again.

If the following message is still shown on the LCD screen, check whether the unit is normal or not.



607 noXX

- XX: 20 → The reel motor does not rotate  
21 → The reel FG cannot be adjusted  
E0 → Cannot save data  
Fd → Not supported menu  
FE → Prohibits adjustments (Ex.: Tape loaded)

7. Press the MENU button, and exit from the maintenance menu.  
The state before the maintenance menu indication will be displayed on the LCD screen.

## 10-3. RF System Adjustment


### 10-3-1. REC Current Adjustment

#### Note

Be sure to perform this adjustment when the RP-91 board is repaired and recording amplifier (IC777) or EEPROM (IC770) on the board is replaced.

Be sure not to perform this adjustment when replacing the RP-91 board.

1. Set the unit in maintenance menu, and select Menu No. 700.
- (1) While pressing the SHIFT button, press the MENU button, then release the SHIFT button, and press the MENU button for more than one second.  
The following message is displayed on the LCD screen.  
(In the following description, an underlined part indicates a portion of the display which is blinking.)



- (2) Press the RESET (MENU SET) button once to blink "oFF".  
The following message is displayed on the LCD screen.



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on".  
The following message is displayed on the LCD screen.



Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.  
The following message is displayed on the LCD screen.

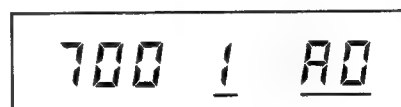


Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

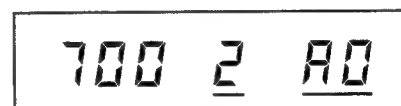
- (5) Press the ADVANCE button several times to display Menu No. 700.  
The following message is displayed on the LCD screen.



2. Press the RESET (MENU SET) button.
3. Check that the following message is displayed on the LCD screen:



4. Press the RESET (MENU SET) button.
5. Check that the following message is displayed on the LCD screen:



6. Press the RESET (MENU SET) button.
7. Check that the following message is displayed on the LCD screen:



If the following message is displayed on the LCD screen, exit from Menu No. 700, and perform from step 1 again.

If the following message is still shown on the LCD screen, check whether the unit is normal or not.



X X: E0 → Cannot save data

8. Press the MENU button, and exit from the maintenance menu.  
The state before the maintenance menu indication will be displayed on the LCD screen.

### 10-3-2. PLL Adjustment

#### Note

Be sure to perform this adjustment when the RP-91 board is repaired and PLL (IC773) or EEPROM (IC770) on the RP-91 board is replaced.

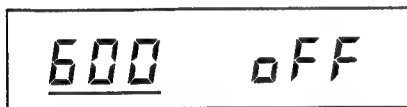
Be sure not to perform this adjustment when replacing the RP-91 board.

1. Set the unit in the maintenance menu, and select Menu No. 701.

- (1) While pressing the SHIFT button, press the MENU button, then release the SHIFT button, and press the MENU button for more than one second.

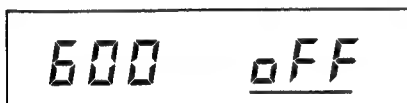
The following message is displayed on the LCD screen.

(In the following description, an underlined part indicates a portion of the display which is blinking.)



- (2) Press the RESET (MENU SET) button once to blink "oFF."

The following message is displayed on the LCD screen.



Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on."

The following message is displayed on the LCD screen.



Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.

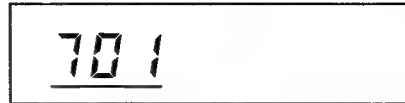
The following message is displayed on the LCD screen.



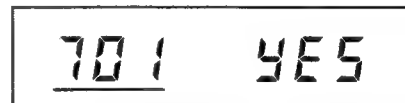
Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button several times to display Menu No. 701.

The following message is displayed on the LCD screen.

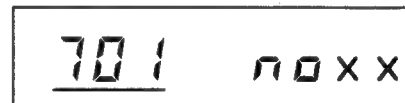


2. Press the RESET (MENU SET) button.
3. Load a blank tape, and wait for a while (8 minutes or less).
4. Eject the blank tape.
5. Check that the following message is displayed on the LCD screen:



If the following message is displayed on the LCD screen, exit from Menu No. 701 and perform from step 1 again.

If the following message is still shown on the LCD screen, check the replaced IC and/or adjacent circuitry.



X X: 42 → Could not record time required for adjustment or check

43 → Could not find starting point of recording

45 → CLOCK DELAY cannot be adjusted

50 → PLL F0 (CH1) cannot be adjusted

51 → PLL F0 (CH2) cannot be adjusted

52 → PLL capture range cannot be adjusted

ED → Cannot save data

Fb → Operation mode changed during adjustment or check. Or could not record

Fc → Error occurred during adjustment or check

Fd → Not supported menu

FE → Prohibits adjustments (Ex.: Tape loaded)

#### Note

Because the recording in the special mode is performed during adjustments, the tape used in this adjustment cannot be played back properly.

6. Press the MENU button, and exit from the maintenance menu.

The state before the maintenance menu indication will be displayed on the LCD screen.

### 10-3-3. AGC and Delay Adjustment

#### Note

Be sure to perform this adjustment when the RP-91 board is repaired and AEQ (IC775) or EEPROM (IC770) on the RP-91 board is replaced.

Be sure not to perform this adjustment when replacing the RP-91 board.

1. Set the unit in maintenance menu, and select Menu No. 702.

- (1) While pressing the SHIFT button, press the MENU button, then release the SHIFT button, and press the MENU button for more than one second.  
The following message is displayed on the LCD screen.  
(In the following description, an underlined part indicates a portion of the display which is blinking.)

600    oFF

- (2) Press the RESET (MENU SET) button once to blink "oFF".  
The following message is displayed on the LCD screen.

600    oFF

Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will be blink alternately.

- (3) Press the ADVANCE button once to select "on."  
The following message is displayed on the LCD screen.

600    on

Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.  
The following message is displayed on the LCD screen.

600    on

Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button several times to display Menu No. 702.  
The following message is displayed on the LCD screen.

702

2. Press the RESET (MENU SET) button.
3. Load a blank tape, and wait for a while (10 minutes or less).
4. Eject the blank tape.
5. Check that the following message is displayed on the LCD screen:

702    YES

If the following message is displayed on the LCD screen, exit from Menu No. 702 and perform from step 1 again.

If the following message is still shown on the LCD screen, check the replaced IC and/or adjacent circuitry.

702    noXX

- XX: 40 → EQ cannot be adjusted  
 41 → Fault detected when error rate was checked after adjustment  
 42 → Could not record time required for adjustment or check  
 43 → Could not find starting point of recording  
 44 → AGC LEVEL cannot be adjusted  
 45 → CLOCK DELAY cannot be adjusted  
 E0 → Cannot save data  
 Fb → Operation mode changed during adjustment or check. Or could not record  
 Fc → Error occurred during adjustment or check  
 Fd → Not supported menu  
 FE → Prohibits adjustments (Ex.: Tape loaded)

#### Note

Because the recording in the special mode is performed during adjustments, the tape used in this adjustment cannot be played back properly.

6. Press the MENU button, and exit from the maintenance menu.  
The state before the maintenance menu indication will be displayed on the LCD screen.

### 10-3-4. AUTO EQ Adjustment

1. Set the unit in maintenance menu, and select Menu No. 704.

- (1) While pressing the SHIFT button, press the MENU button, then release the SHIFT button, and press the MENU button for more than one second.  
The following message is displayed on the LCD screen.  
(In the following description, an underlined part indicates a portion of the display which is blinking.)

600    oFF

- (2) Press the RESET (MENU SET) button once to blink "oFF".  
The following message is displayed on the LCD screen.

600    oFF

Each time the RESET (MENU SET) button is pressed, "600" and "oFF" will blink alternately.

- (3) Press the ADVANCE button once to select "on."  
The following message is displayed on the LCD screen.

600    on

Each time the ADVANCE button is pressed, "on" and "oFF" will blink alternately.

- (4) Press the RESET (MENU SET) button once.  
The following message is displayed on the LCD screen.

600    on

Each time the RESET (MENU SET) button is pressed, "600" and "on" will blink alternately.

- (5) Press the ADVANCE button several time to display Menu No. 704 on the LCD screen.  
The following message is displayed on the LCD screen.

704

2. Press the RESET (MENU SET) button.
3. Load a blank tape, and wait for a while (6 minutes or less).
4. Eject the blank tape.
5. Check that the following message is displayed on the LCD screen:

704    YES

If the following message is displayed on the LCD screen, exit from Menu No. 704 and perform from step 1 again.

If the following message is still shown on the LDC screen, check whether the unit is normal or not.

704    noXX

X X: 40 → EQ cannot be adjusted

41 → Fault detected when error rate was checked after adjustment

42 → Could not record time required for adjustment or check

43 → Could not find starting point of recording.

E0 → Cannot save data

Fb → Operation mode changed during adjustment or check. Or could not record

Fc → Error occurred during adjustment or check.

Fd → Not supported menu

FE → Prohibits adjustments (Ex.: Tape loaded)

#### Note

Because the recording in the special mode is performed during adjustments, the tape used in this adjustment cannot be played back properly.

6. Press the MENU button, and exit from the maintenance menu.

The state before the maintenance menu indication will be displayed on the LCD screen.



## 10-4. Audio System Adjustment

### Equipment Required

- Audio signal generator (HEWLETT PACKARD HP8904 or equivalent)
- Audio level meter (HEWLETT PACKARD HP3400A or equivalent)
- DC power supply (SONY AC-550/550CE or CMA-8A/8ACE)
- Blank tape (SONY DVM30-ME, DVM30-NME or equivalent)
- Alignment tape XH5-1A (SONY Part No. 8-967-999-21: for DSR-390/370)
- Alignment tape XH5-1AP (SONY Part No. 8-967-999-25: for DSR-390P/370P)

### Alignment Tape Contents

XH5-1A (SONY Part No. 8-967-999-21: for DSR-390/370)

VIDEO	TIME CODE (h) (m) (s)	REC (sec.)	AUDIO	
Black burst	23 : 59 : 00	60	No signal	
75 % full color bars	00 : 00	60	1 kHz	
60 % multi burst	01 : 00	60	20 Hz	
Bowtie with mod 12.5T	02 : 00	30	14.5 kHz	
Shallow ramp	02 : 30	30	10 kHz	
	03 : 00	30	No signal	
Cross hatch (index)	03 : 30	30	1 kHz 0 dBFS	
Line 17	04 : 00	40	1 ch	1 kHz
75 % full color bars	04 : 40	40	2 ch	
Quad phase	05 : 20	40	3 ch	
	06 : 00	40	4 ch	
Black burst	06 : 40	5	No signal	
	06 : 45	5		
60 % multi burst (for composite)	06 : 50	60	1 kHz	
Mod 12.5T	07 : 50	30	20 Hz	
Shallow ramp (B-Y/R-Y OFF)	08 : 20	30	20 kHz	
	08 : 50	30	10 kHz	
Cross hatch (index)	09 : 20	30	1 kHz 0 dBFS	
Chroma noise	09 : 50	30	1 kHz	
Line 17	10 : 20	30		
75 % full color bars	10 : 50	180		
60 % multi burst	13 : 50	60		
Mod 12.5T	14 : 50	30		
Shallow ramp	15 : 20	60		
75 % full color bars	16 : 20	100		
75 % full color bars (R-Y OFF)	18 : 00	180		
75 % full color bars (B-Y OFF)	21 : 00	180		
Blanking marker	24 : 00	180		
Line 17 (R-Y OFF)	27 : 00	180		
Line 17 (B-Y OFF)	30 : 00	180		

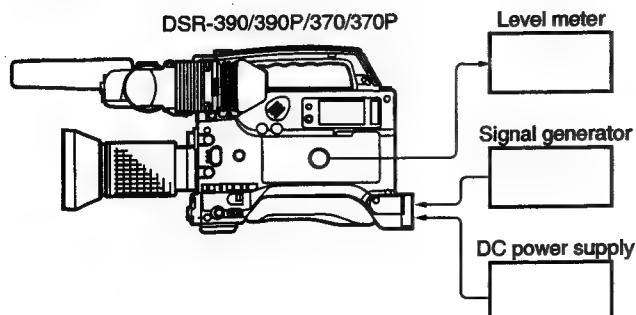
\* Audio levels are -20 dBFS (Reference), except 1 kHz 0 dBFS part.

XH5-1AP (Sony Part No. 8-967-999-25: for DSR-390P/370P)

VIDEO	TIME CODE (h) (m) (s)	REC (sec.)	AUDIO	
Black burst	23 : 59 : 00	60	No signal	
100 % full color bars	00 : 00	60	1 kHz	
60 % multi burst	01 : 00	60	20 Hz	
Bowtie with mod 10T	02 : 00	30	14.5 kHz	
Shallow ramp	02 : 30	30	10 kHz	
	03 : 00	30	No signal	
Cross hatch (index)	03 : 30	30	1 kHz 0 dBFS	
Line 17	04 : 00	40	1 ch	1 kHz
100 % full color bars	04 : 40	40	2 ch	
Quad phase	05 : 20	40	3 ch	
	06 : 00	40	4 ch	
Black burst	06 : 40	5	No signal	
	06 : 45	5		
60 % multi burst (for composite)	06 : 50	60	1 kHz	
Mod 10T	07 : 50	30	20 Hz	
Shallow ramp (B-Y/R-Y OFF)	08 : 20	30	20 kHz	
	08 : 50	30	10 kHz	
Cross hatch (Index)	09 : 20	30	1 kHz 0 dBFS	
Chroma noise	09 : 50	30	1 kHz	
Line 17	10 : 20	30		
100 % full color bars	10 : 50	180		
60 % multi burst	13 : 50	60		
Mod 10T	14 : 50	30		
Shallow ramp	15 : 20	60		
100 % full color bars	16 : 20	100		
100 % full color bars (R-Y OFF)	18 : 00	180		
100 % full color bars (B-Y OFF)	21 : 00	180		
Blanking marker	24 : 00	180		
Line 17 (R-Y OFF)	27 : 00	180		
Line 17 (B-Y OFF)	30 : 00	180		

\* Audio levels are -18 dBFS (Reference), except 1 kHz 0 dBFS part.

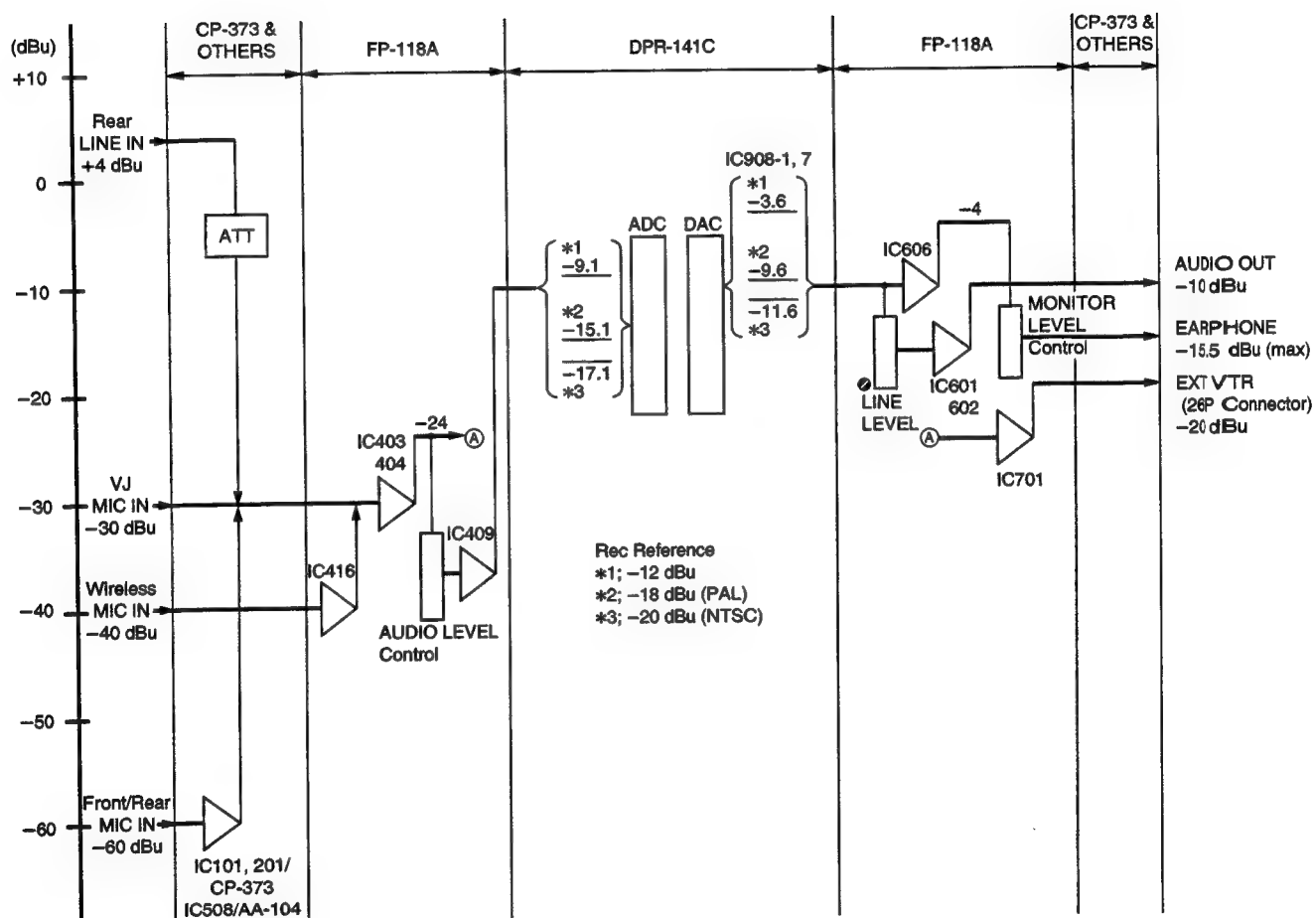
## System Connection



## Precautions on Adjustments

- The alignment tape can be used within the limits about 50 times. It is recommended that the tape is marked for reference.
- 0 dBu = 0.775 V<sub>rms</sub>

## Level Diagram



#### 10-4-1. Audio Level Volume Reference Position Adjustment

**Equipment:** Audio level meter  
Audio signal generator

**Preparations:** • AUDIO INPUT CH-1/CH-2: 1 kHz, +4.0 dBu  
• EE mode

**Test point:** CH-1: TP401/FP-118A board (E-3)  
CH-2: TP402/FP-118A board (E-3)

**Adjusting point:** CH-1 AUDIO LEVEL adjustment control  
RV401/FP-118A board  
CH-2 AUDIO LEVEL adjustment control  
RV402/FP-118A board

**Specification:**  $-10.3 \pm 0.2$  dBu

#### 10-4-2. Monitor Output (LINE OUT) Level Adjustment

**Equipment:** Audio level meter  
Audio signal generator

**Preparations:** • AUDIO INPUT CH-1/CH-2: 1 kHz, +4.0 dBu  
• Terminate the following monitor outputs with 47 k $\Omega$  resistors.  
CH-1: TP601/FP-118A board  
CH-2: TP602/FP-118A board  
• EE mode

**Test point:** CH-1: TP601/FP-118A board (D-3)  
CH-2: TP602/FP-118A board (D-3)

**Adjusting point:** CH-1: RV601/FP-118A board (D-4)  
CH-2: RV602/FP-118A board (D-4)

**Specification:**  $-10.0 \pm 0.5$  dBu

#### 10-4-3. Limiter Level Adjustment

**Equipment:** Audio level meter  
Audio signal generator

**Preparations:** • AUDIO SELECT SW CH-1: AUTO  
• AUDIO SELECT SW CH-2: AUTO  
• [REAR PANEL] CH-1: LINE or MIC  
• [REAR PANEL] CH-2: LINE or MIC  
• EE mode

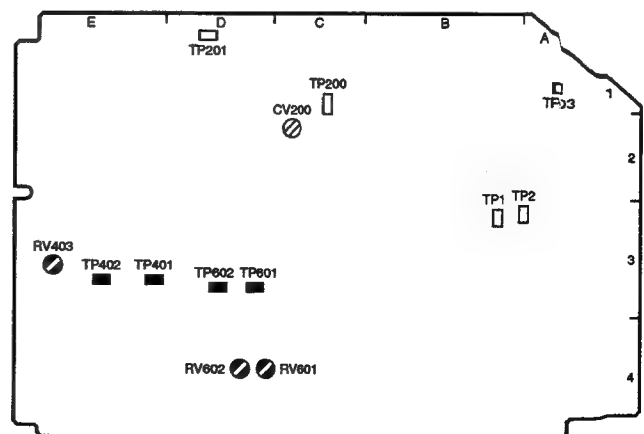
##### Adjusting procedure

1. Input the +20 dB signal (for reference signal) to AUDIO INPUT CH-1/CH-2.  
LINE: 1 kHz, +24 dBu  
(Reference signal; 1 kHz, +4 dBu)  
MIC: 1 kHz, -40 dBu  
(Reference signal; 1 kHz, -60 dBu)
2. Adjust the level within the specification.

**Test point:** TP401/FP-118A board (E-3)

**Adjusting point:** RV403/FP-118A board (E3)

**Specification:**  $-8.3 \pm 0.2$  dBu



FP-118A BOARD (B SIDE)

## 10-5. Video System Adjustment

### Equipment Required

- Oscilloscope (Tektronix 2445B/200 MHz or equivalent)
- DC power supply (SONY AC-550/550CE or CMA-8A/8ACE)
- Alignment tape XH5-1A  
(SONY Part No. 8-967-999-21 : for DSR-390/370)
- Alignment tape XH5-1AP  
(SONY Part No. 8-967-999-25 : for DSR-390P/370P)
- S-BNC video cable (SONY Part No. J-6381-380-A)

### Precautions for Adjustments

- The alignment tape can be used within the limits for 50 times. It is recommended that the tape is marked for reference.
- Terminate at 75  $\Omega$  when measuring S-VIDEO OUT and MONITOR OUT.

### Alignment Tape Contents

XH5-1A (SONY Part No. 8-967-999-21 : for DSR-390/370)

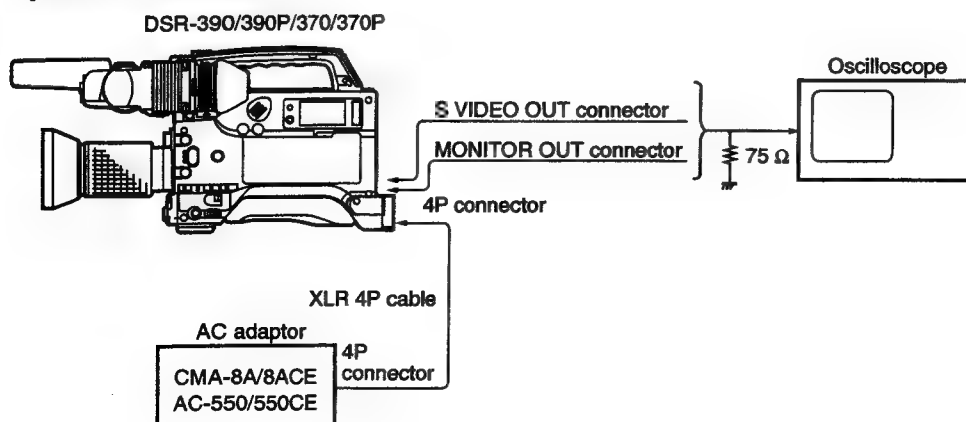
VIDEO	TIME CODE (h) (m) (s)	REC (sec.)	AUDIO	
Black burst	23 : 59 : 00	60	No signal	
75 % full color bars	00 : 00	60	1 kHz	
60 % multi burst	01 : 00	60	20 Hz	
Bowtie with mod 12.5T	02 : 00	30	14.5 kHz	
Shallow ramp	02 : 30	30	10 kHz	
	03 : 00	30	No signal	
Cross hatch (index)	03 : 30	30	1 kHz 0 dBFS	
Line 17	04 : 00	40	1 ch	1 kHz
75 % full color bars	04 : 40	40	2 ch	
Quad phase	05 : 20	40	3 ch	
	06 : 00	40	4 ch	
Black burst	06 : 40	5	No signal	
	06 : 45	5		
60 % multi burst (for composite)	06 : 50	60	1 kHz	
Mod 12.5T	07 : 50	30	20 Hz	
Shallow ramp (B-Y/R-Y OFF)	08 : 20	30	20 kHz	
	08 : 50	30	10 kHz	
Cross hatch (index)	09 : 20	30	1 kHz 0 dBFS	
Chroma noise	09 : 50	30	1 kHz	
Line 17	10 : 20	30		
75 % full color bars	10 : 50	180		
60 % multi burst	13 : 50	60		
Mod 12.5T	14 : 50	30		
Shallow ramp	15 : 20	60		
75 % full color bars	16 : 20	100		
75 % full color bars (R-Y OFF)	18 : 00	180		
75 % full color bars (B-Y OFF)	21 : 00	180		
Blanking marker	24 : 00	180		
Line 17 (R-Y OFF)	27 : 00	180		
Line 17 (B-Y OFF)	30 : 00	180		

\* Audio levels are -20 dBFS (Reference), except 1 kHz 0 dBFS part.

VIDEO	TIME CODE (h) (m) (s)	REC (sec.)	AUDIO	
Black burst	23 : 59 : 00	60	No signal	
100 % full color bars	00 : 00	60	1 kHz	
60 % multi burst	01 : 00	60	20 Hz	
Bowtie with mod 10T	02 : 00	30	14.5 kHz	
Shallow ramp	02 : 30	30	10 kHz	
	03 : 00	30	No signal	
Cross hatch (index)	03 : 30	30	1 kHz 0 dBFS	
Line 17	04 : 00	40	1 ch	1 kHz
100 % full color bars	04 : 40	40	2 ch	
Quad phase	05 : 20	40	3 ch	
	06 : 00	40	4 ch	
Black burst	06 : 40	5	No signal	
	06 : 45	5		
60 % multi burst (for composite)	06 : 50	60	1 kHz	
Mod 10T	07 : 50	30	20 Hz	
Shallow ramp (B-Y/R-Y OFF)	08 : 20	30	20 kHz	
	08 : 50	30	10 kHz	
Cross hatch (index)	09 : 20	30	1 kHz 0 dBFS	
Chroma noise	09 : 50	30	1 kHz	
Line 17	10 : 20	30		
100 % full color bars	10 : 50	180		
60 % multi burst	13 : 50	60		
Mod 10T	14 : 50	30		
Shallow ramp	15 : 20	60		
100 % full color bars	16 : 20	100		
100 % full color bars (R-Y OFF)	18 : 00	180		
100 % full color bars (B-Y OFF)	21 : 00	180		
Blanking marker	24 : 00	180		
Line 17 (R-Y OFF)	27 : 00	180		
Line 17 (B-Y OFF)	30 : 00	180		

\* Audio levels are -18 dBFS (Reference), except 1 kHz 0 dBFS part.

## System Connection



### Maintenance Menu Settings

1. Press the MENU button while pressing the SHIFT button, and release the SHIFT button while pressing the MENU button. Check that "600\_off" is displayed on the LCD screen after about 1 second, and then release the MENU button.
2. Press the RESET button to blink "off," and press the ADVANCE button to display "on."
3. Press the RESET button to blink "600" to enable the maintenance menu, and press the ADVANCE button to display "660."
4. Press the RESET button to check the display so that it is "660\_tAdj."

### 10-5-1. PB Y SYNC Level Adjustment

**MENU No.:** PAGE 10 VTR SYNC

**Measuring point:** S-VIDEO (Y) OUT

**VTR MODE:** PB

**Tape:** 75 % Full Color bars/XH5-1A

100 % Full Color bars/XH5-1AP

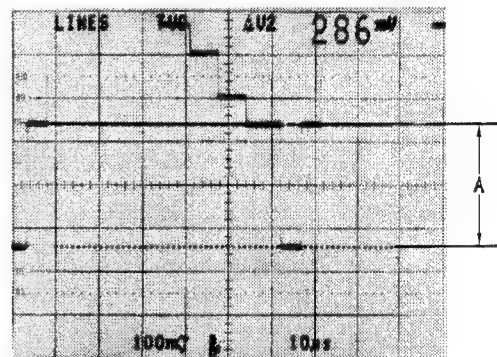
**Specification:** DSR-390/370 :  $A = 286 \pm 4$  mV

DSR-390P/370P :  $A = 300 \pm 4$  mV

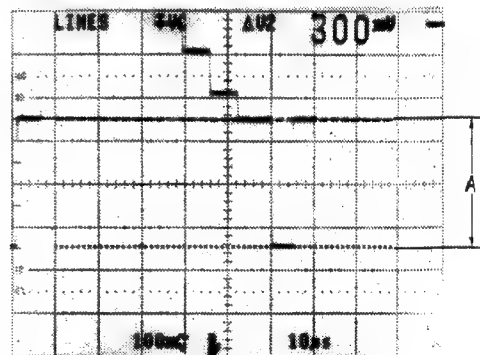
#### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

#### For DSR-390/370



#### For DSR-390P/370P



## 10-5-2. PB Y Level Adjustment

**MENU No.:** PAGE 9 VTR Y

**Measuring point:** S-VIDEO (Y) OUT

**VTR MODE:** PB

**Tape:** 75 % Full Color bars/XH5-1A  
100 % Full Color bars/XH5-1AP

**Specification:** Y LEVEL

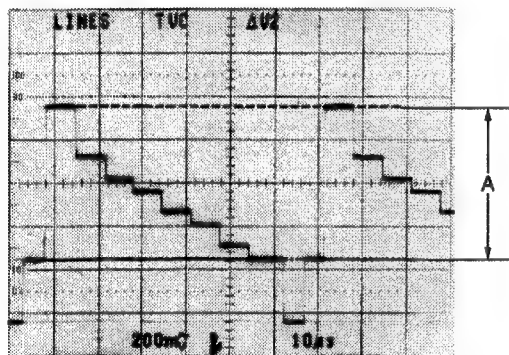
DSR-390/370 :  $A = 714 \pm 5 \text{ mV}$

DSR-390P/370P :  $A = 700 \pm 5 \text{ mV}$

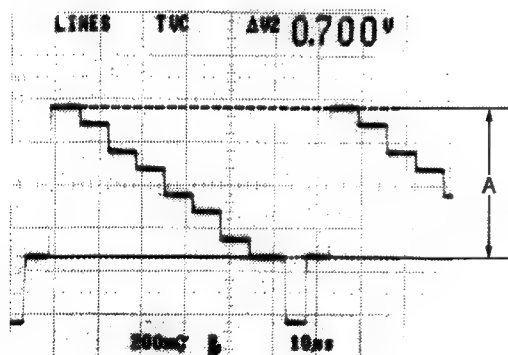
### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

#### For DSR-390/370



#### For DSR-390P/370P





### 10-5-3. PB Y/B-Y Delay Adjustment

For DSR-390/370

**MENU No.:** PAGE 9 B-Y DELAY

**Measuring point:** MONITOR OUT

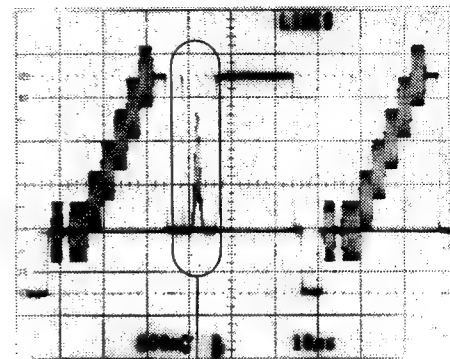
**VTR MODE:** PB

**Tape:** Line 17 (R-Y off)/XH5-1A

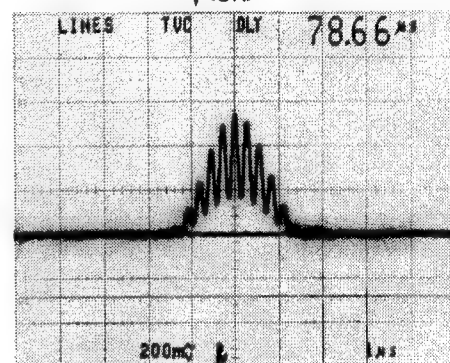
**Specification:** Adjust the envelope so that it is symmetrical on the left and right sides.

#### Adjustment Procedure

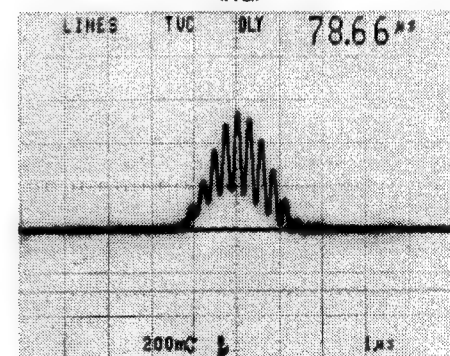
Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.



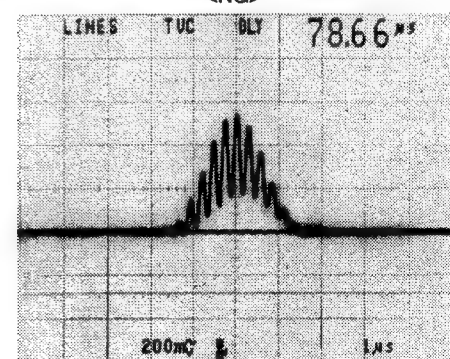
magnify  
↓<OK>



<NG>



<NG>

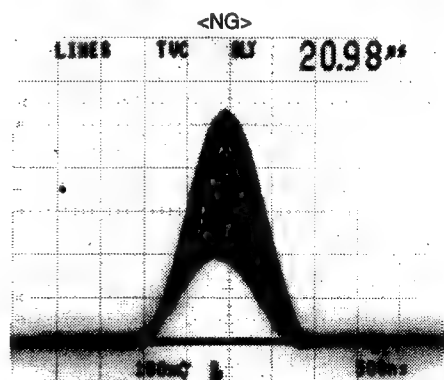
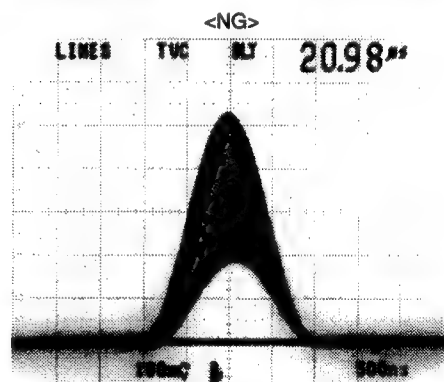
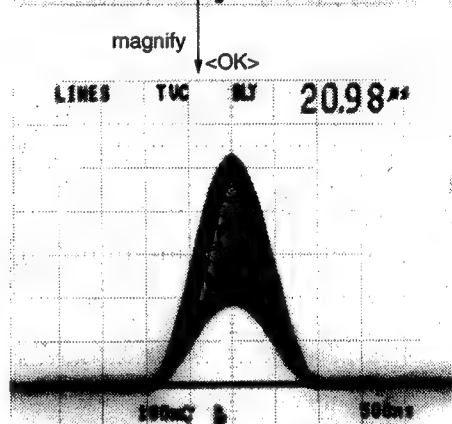
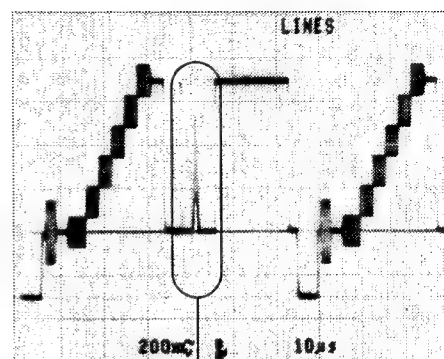


# For DSR-390P/370P

**MENU No.:** PGAE 9 B-Y DELAY  
**Measuring point:** MONITOR OUT  
**VTR MODE:** PB  
**Tape:** Line 17 (R-Y off)/XH5-1AP  
**Specification:** Adjust the envelope so that it is symmetrical on the left and right sides.

## Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.



## 10-5-4. PB Y/R-Y Delay Adjustment

For DSR-390/370

**MENU No.:** PAGE 9 R-Y DELAY

**Measuring point:** MONITOR OUT

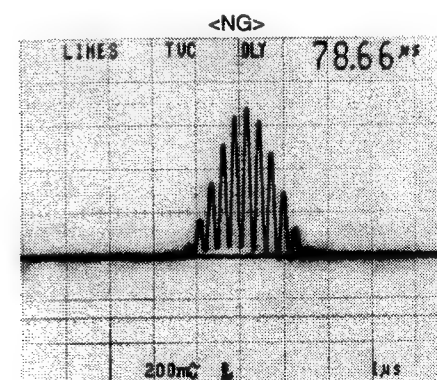
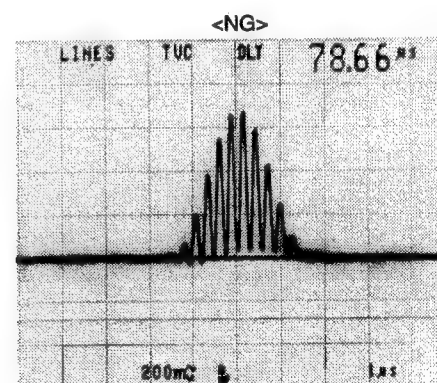
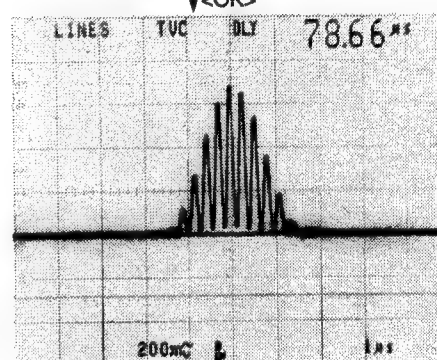
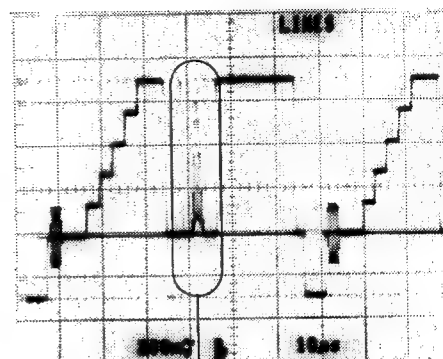
**VTR MODE:** PB

**Tape:** Line 17 (B-Y off)/XH5-1A

**Specification:** Adjust the envelope so that it is symmetrical on the left and right sides.

### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.



# For DSR-390P/370P

**MENU No.:** PAGE 9 R-Y DELAY

**Measuring point:** MONITOR OUT

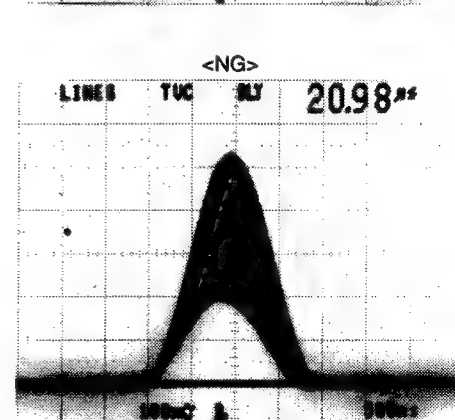
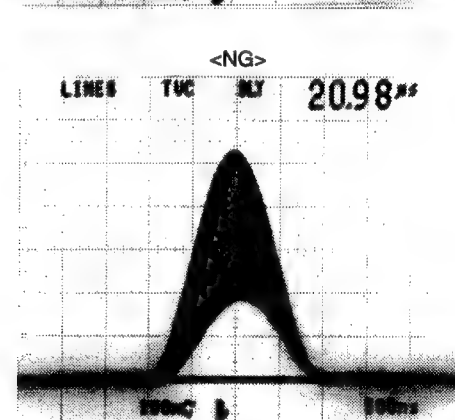
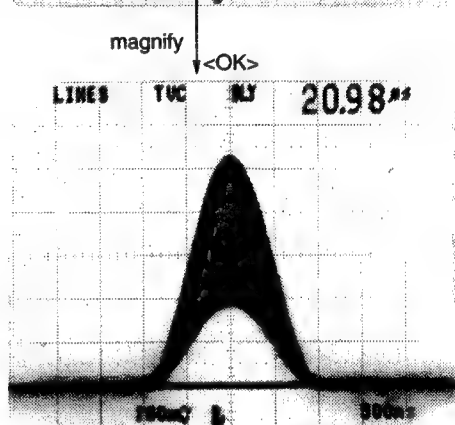
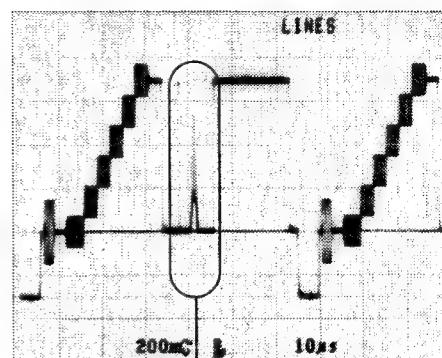
**VTR MODE:** PB

**Tape:** Line 17 (B-Y off)/XH5-1AP

**Specification:** Adjust the envelope so that it is symmetrical on the left and right sides.

## Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.



### 10-5-5. PB R-Y Level Adjustment

**MENU No.:** PAGE 9 VTR R-Y

**Measuring point:** S-VIDEO (C) OUT

**VTR MODE:** PB

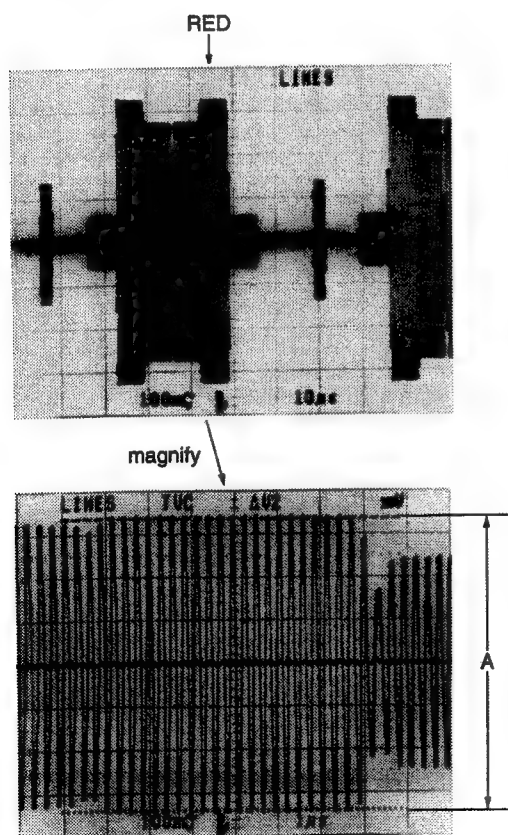
**Tape:** 75 % Full Color bars (B-Y off)/  
XH5-1A  
100 % Full Color bars (B-Y off)/  
XH5-1AP

**Specification:** Chroma (red) level  
DSR-390/370 :  $A = 659 \pm 5 \text{ mV}$   
DSR-390P/370P :  $A = 885 \pm 5 \text{ mV}$

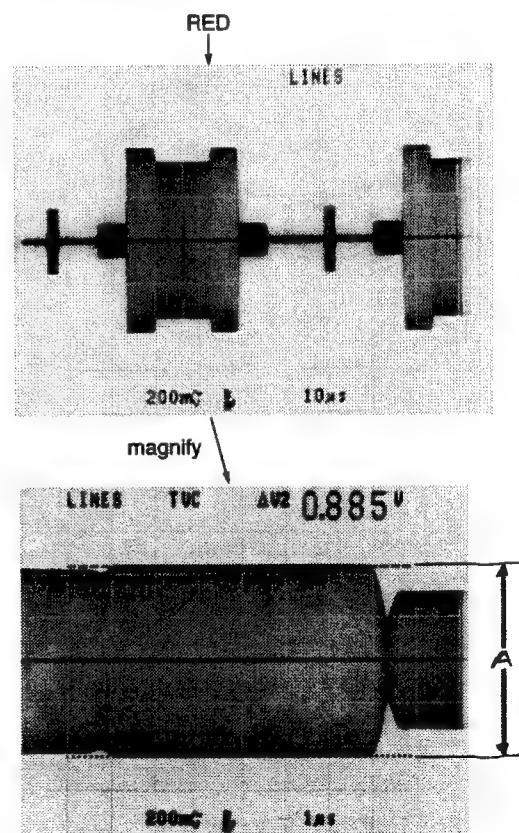
#### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

**For DSR-390/370**



**For DSR-390P/370P**



### 10-5-6. PB B-Y Level Adjustment

**MENU No.:** PAGE 9 VTR B-Y

**Measuring point:** S-VIDEO (C) OUT

**VTR MODE:** PB

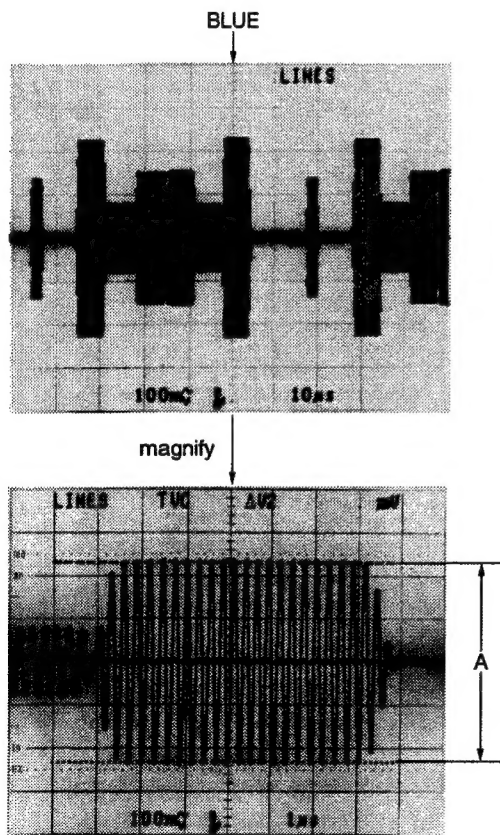
**Tape:** 75 % Full Color bars (R-Y off)/  
XH5-1A  
100 % Full Color bars (R-Y off)/  
XH5-1AP

**Specification:** Chroma (blue) level  
DSR-390/370 :  $A = 468 \pm 5 \text{ mV}$   
DSR-390P/370P :  $A = 612 \pm 5 \text{ mV}$

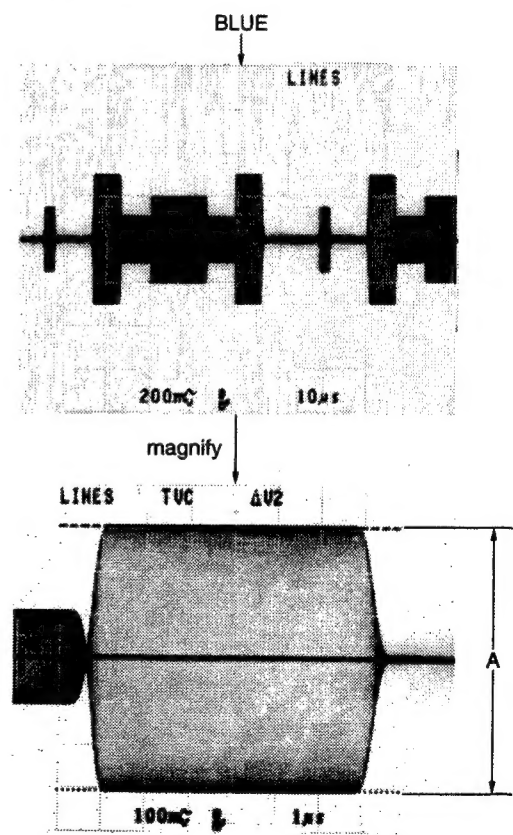
#### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

#### For DSR-390/370



#### For DSR-390P/370P



## 10-5-7. PB Burst Level Adjustment

**MENU No.:** PAGE 10 VTR BST

**Measuring point:** S-VIDEO (C) OUT

**VTR MODE:** PB

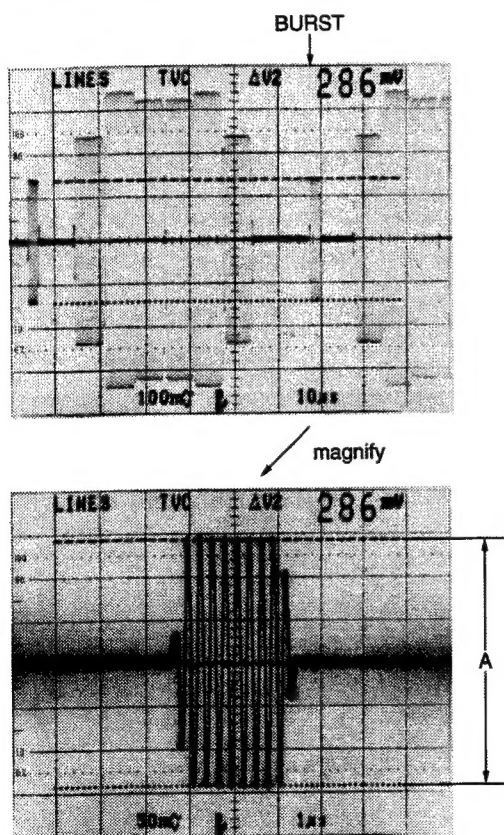
**Tape:** 75 % Full Color bars/XH5-1A  
100 % Full Color bars/XH5-1AP

**Specification:** DSR-390/370 :  $A = 286 \pm 3 \text{ mV}$   
DSR-390P/370P :  $A = 300 \pm 3 \text{ mV}$

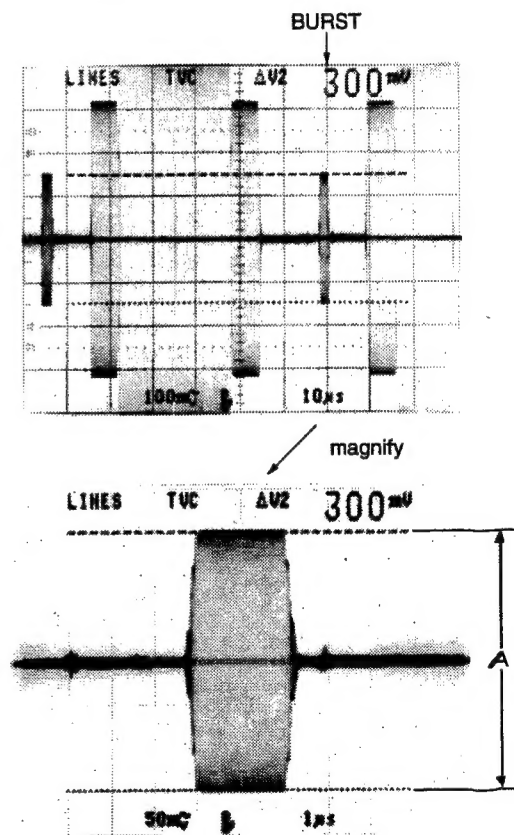
### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

**For DSR-390/370**



**For DSR-390P/370P**





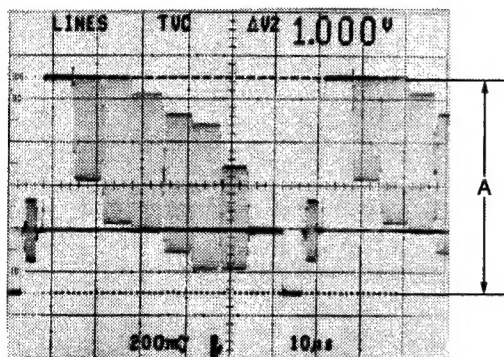
### 10-5-8. PB VBS Level Adjustment

**MENU No.:** PAGE 10 PB VBS  
**Measuring point:** MONITOR OUT  
**VTR MODE:** PB  
**Tape:** 75 % Full Color bars/XH5-1A  
 100 % Full Color bars/XH5-1AP  
**Specification:**  $A = 1.00 \pm 0.01 \text{ V}$

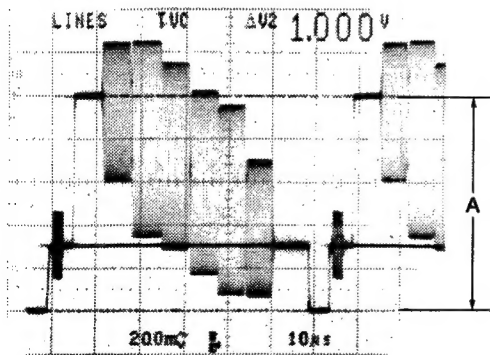
#### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

For DSR-390/370



For DSR-390P/370P



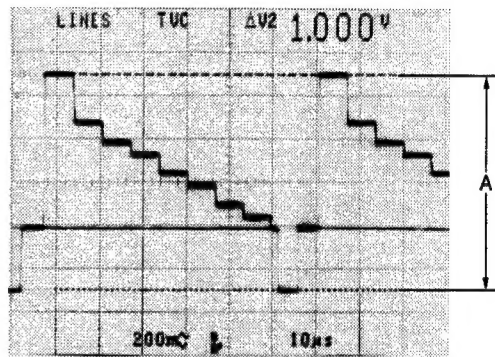
### 10-5-9. EE Y Level Adjustment

**Input signal:** Internal Color bars  
**MENU No.:** PAGE 10 EE S-Y  
**Measuring point:** S-VIDEO (Y) OUT  
**VTR MODE:** EE  
**Tape:** Not required.  
**Tape:**  $A = 1.00 \pm 0.01 \text{ V}$

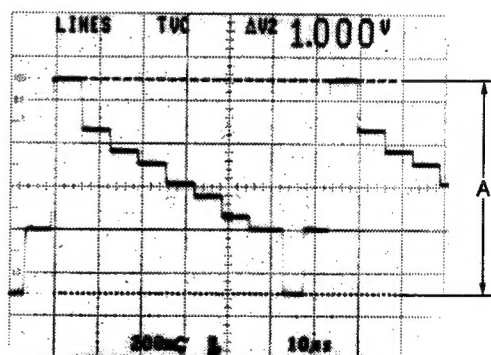
#### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

For DSR-390/370



For DSR-390P/370P





## 10-5-10. EE Chroma Level Adjustment

**Input signal:** Internal color bars

**MENU No.:** PAGE 10 EE S-C

**Measuring point:** S-VIDEO (C) OUT

**VTR MODE:** EE

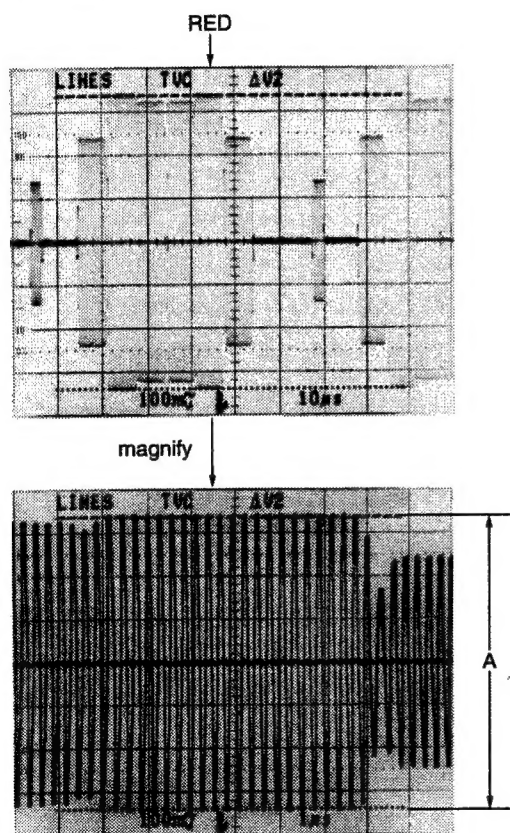
**Tape:** Not required.

**Specification:** DSR-390/370 :  $A = 627 \pm 5 \text{ mVp-p}$   
DSR-390P/370P :  $A = 664 \pm 5 \text{ mVp-p}$

### Adjustment Procedure

Perform adjustment by turning the MENU dial, and store the data by pushing the MENU dial.

**For DSR-390/370**



**For DSR-390P/370P**

